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## DESIGN VERIFICATION TEST REPORT FOR THE M43A1 UPGRADE

Steven D. Kubicko  
Glenn W. Weaver  
George P. Lozos

ENVIRONMENTAL TECHNOLOGIES GROUP, INC.  
Baltimore, MD 21284-9840

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13. ABSTRACT (Maximum 200 words) This report provides the results of performance testing conducted at the U.S. Army Edgewood Research, Development and Engineering Center (ERDEC) * on prototype Ion Mobility Spectrometry (IMS) upgraded M43A1 Detectors, identified as the M43-APD. The M43-APD, developed by Environmental Technologies Group, Inc. (ETG), is an adaption of ETG's ICAM-APD Chemical Agent Detector. The M43A1 Detector was modified by removing the existing ionization detection components and replacing them with ETG's IMS-based components. The upgraded M43-APD provides increased sensitivity to nerve agents, improved interference rejection for fewer false alarms and the capability to detect blister agents. The testing was conducted in two phases under contract DAAM01-97-C-0033. The first phase was performed at ETG and included low temperature storage/operation, high temperature storage/operation, and simulant response testing. The second phase was performed at ERDEC and included agent vapor testing at the Government's surety facilities and battlefield interference testing at ERDEC's M-Field. In general, the M43-APD prototypes performed well, however, some minor deficiencies were noted in the detection of GD vapor at ambient temperatures and HD vapor at high temperatures.				
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## PREFACE

The work described in this report was authorized under Contract No. DAAM01-97-C-0033. This work was started in September 1997 and completed in November 1998.

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# DESIGN VERIFICATION TEST REPORT FOR THE M43A1 UPGRADE

## 1. EXECUTIVE SUMMARY

The M43A1 Chemical Detector, part of the M8A1 Chemical Detection System, is and will be for the immediate future the primary chemical detector for the U.S. forces worldwide. Since its initial fielding in 1985, approximately 35,000 systems have been manufactured and placed in over 20 countries. The M43A1 Upgrade Chemical Agent Detector (M43-APD) has been developed at ETG to improve the performance and extend the useful life of the current worldwide inventory.

The M43-APD upgrade is an adaptation of ETG's ICAM-APD chemical agent detector. The M43A1 detector is refurbished by removing the existing ionization detector (cell, pump, electronics) and replacing it with ETG's IMS-based sensor module. With the new sensor module, the M43A1 upgrade now has the capability to detect blister agents (the baseline M43A1 detects only nerve agents) and offers much improved interference rejection for fewer false alarms.

Under contract DAAM01-97-C-0033 to the U.S. Army ERDEC, ETG manufactured and tested two prototype M43-APD detectors. The testing was conducted in two phases. The first phase was performed at ETG and included low temperature storage/operation, high temperature storage/operation, and simulant response testing. The second phase was performed at ERDEC and included agent vapor testing at the Government's surety lab, and battlefield interference testing at M-field.

In general, the M43-APD detectors performed very well. The electronics, pumps, sensor and other hardware operated through the duration of the testing without a single failure. The agent vapor testing showed that the sensitivity and response times for the M43-APD are comparable to those established by ETG's ICAM-APD. Battlefield interference testing also showed that the M43-APD retains the ICAM-APD's high level of interference rejection.

There were, however, two problems encountered during the Government's agent vapor testing. In the first instance, the detectors did not alarm to GD vapor at ambient lab temperature. The test data showed that the GD agent vapor was producing strong peaks in the IMS signature, indicating good sensitivity, but the peaks were outside of the alarm windows that are defined by the agent detection algorithm. These no-alarm conditions can be improved with modification to the agent detection algorithm.

In the second instance, the M43-APD detectors did not alarm to HD at an elevated temperature of +52 °C. There is a contaminant in the negative-mode IMS signature which impedes the formation of a strong reactant ion, with a corresponding reduction in the sensitivity to HD. The precise location of the contaminant could not be isolated, but it appears to be within the M43A1 case assemblies. With some minor changes to the M43-APD pneumatics, ETG believes that this problem can be overcome and the M43-APD will have the same agent detection as the ICAM-APD.

## 2. INTRODUCTION

2.1 Test objectives. The M43A1 Upgrade Chemical Agent Detector (M43-APD) was developed by ETG under contract to the U.S. Army ERDEC (DAAM01-97-C-0033). This contract was part of an engineering study to determine the feasibility of developing a low-cost option to upgrade the capability of the existing M43A1 Chemical Agent Detectors and extend their useful life.

Testing was conducted in two separate phases. In the first phase, ETG conducted design verification testing of two prototype M43-APD detectors. This testing was conducted prior to delivery of the prototypes to the Government, and was limited to simulant testing using H-type and G-type simulants, and operational testing at low temperature (-40 °F) and high temperature (+120 °F).

The second phase was government evaluation testing to characterize the agent-detection performance and the false-alarm performance of the prototype detectors. The second phase of testing was performed at ERDEC using not only the two ETG prototype M43-APD detectors, but also prototype detectors from two other companies. The objective of this testing was to validate contractor performance claims, and to provide a comparison of the prototypes against each other and against the Army's general requirements for chemical-agent detection.

2.2 Description of the equipment under test: M43A1 Upgrade Chemical Agent Detector. The M43A1 Chemical Detector, part of the M8A1 Chemical Detection System, is and will be for the immediate future the primary chemical detector for the U.S. forces worldwide. Since its initial fielding in 1985, approximately 35,000 systems have been manufactured and placed in over 20 countries. The M43A1 Upgrade Chemical Agent Detector (M43-APD) has been developed at ETG to improve the performance and extend the useful life of the current worldwide inventory.

The M43-APD is shown in Figures 1 and 2. In general, the M43A1 detector is refurbished by removing the existing ionization detector (cell, pumps, electronics) and replacing it with ETG's IMS-based ICAM-APD sensor module. This approach improves the performance over the baseline M43A1 detector in several ways. First, the IMS sensor will detect blister agents (mustard gases and lewisite) which the baseline M43A1 does not. Second, the IMS sensor has a lower limit of detection for nerve agents, with response times generally between 10 and 30 seconds. Third, the ETG sensor contains an automatic clear-down following an alarm, eliminating the need for a soldier to manually reset the detector. Finally, the ETG sensor is remarkably better at rejecting battlefield interferences.

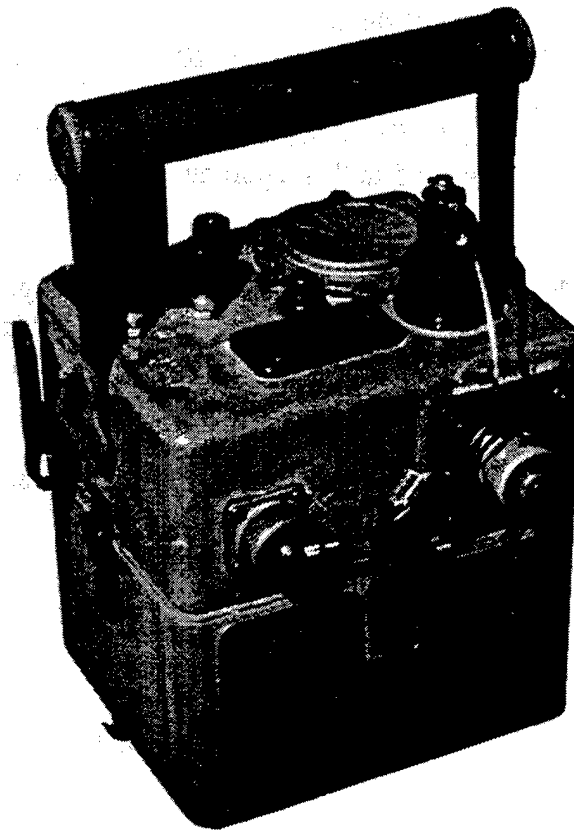


FIGURE 1. *Prototype M43A1 Upgrade Chemical Agent Detector (M43-APD)*

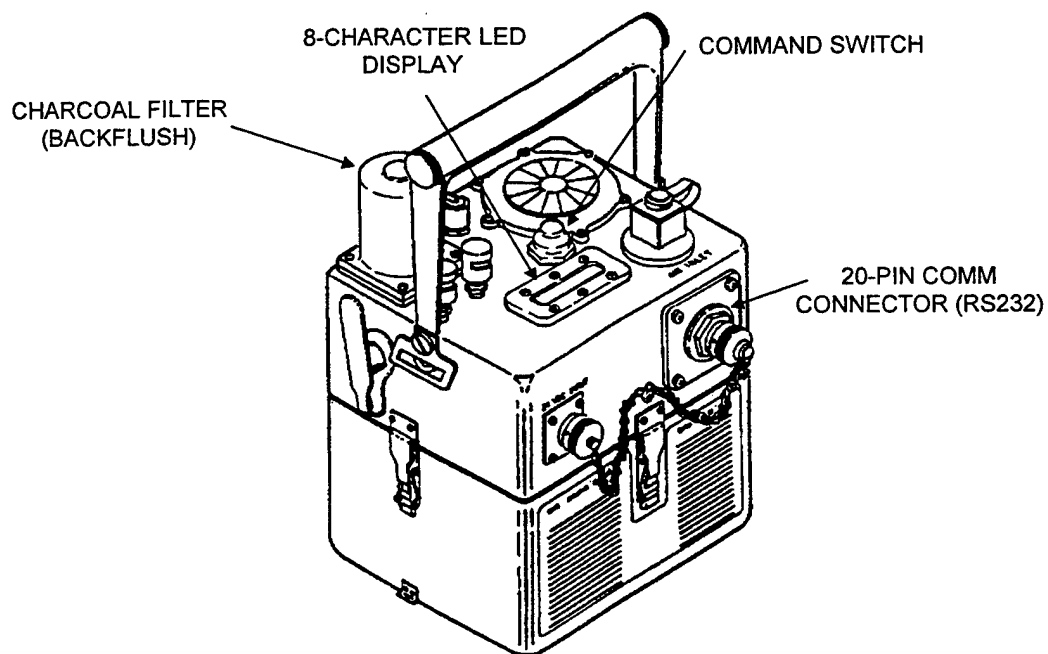


FIGURE 2. *M43A1 Upgrade (M43-APD), overview of new features.*

**2.2.1 Serial numbers of the M43-APD detectors.** Two prototype M43-APD chemical agent detectors were tested. The serial numbers are 980206-4 and 980206-5. Both detectors are identical in physical configuration. Serial number 980206-4 is also referred to as Detector 4 in this report and is the first Government prototype. Serial number 980206-5 is also referred to as Detector 5 in this report and is the second Government prototype.

**2.2.2 Software version.** The version of the operating software and agent-detection algorithm used during each phase of the testing is shown below in Table 1. For reference, a summary of software development during the M43-APD development is included as Table 2.

TABLE 1. *Software version used during M43-APD testing*

<u>Test</u>	<u>Software Version</u>
Low temperature	M502a
High temperature	M502b
Simulant sensitivity	M502a / M502b
Agent vapor	M502b
M-field	M502b / M502d

TABLE 2. *Summary of improvements made to the ETG operating software and agent-detection algorithm that have been made since ICAM-APD testing in July 97 (DAAM01-97-M-0071) and which have been incorporated into the M43-APD software.*

<u>Date</u>	<u>Version</u>	<u>Features and Changes</u>
June 97	A422c	<ul style="list-style-type: none"> <li>Configuration baseline, delivered with 6 ICAM-APD detectors at the conclusion of contract DAAM01-97-M-0071.</li> </ul>
June 97	A423c	<ul style="list-style-type: none"> <li>Provides additional interference rejection for AFFF.</li> </ul>
Aug 97	A425b	<ul style="list-style-type: none"> <li>Updated GA, GB, GD, VX detection windows based on testing during June and July 1997.</li> <li>Revised criteria which defines allowable positions of the reactant ion peaks during startup.</li> <li>Revised the criteria that defines when the detector automatically recalibrates based on movement of the reactant ions.</li> <li>Revised agent-detection classifiers that are used during cold-temperature operation.</li> <li>Raised the upper limit at which the ammonia-source heater is turned</li> </ul>

<u>Date</u>	<u>Version</u>	<u>Features and Changes</u>
		on at cold temperatures.
Mar 98	M500	<ul style="list-style-type: none"> <li>Added hardware drivers and operator interfaces required to operate the M43-APD.</li> </ul>
Mar 98	M502a	<ul style="list-style-type: none"> <li>Updated the agent-detection algorithm to improve GD sensitivity.</li> <li>Revised agent-detection classifiers that are used during cold-temperature operation to correct for differences in the internal case temperature between ICAM-APD and M43-APD.</li> <li>Corrected a software bug which was preventing the ammonia source heater from turning on at low temperatures.</li> <li>Raised the upper limit at which the ammonia-source heater is turned on at cold temperatures to correct for differences in the internal case temperature between ICAM-APD and M43-APD.</li> </ul>
7 May 98	M502b	<ul style="list-style-type: none"> <li>Lowered the alarm thresholds for HD in order to allow the H confidence sample to alarm following high-temperature storage.</li> </ul>
30 Aug 98	M502d	<ul style="list-style-type: none"> <li>Disabled the built-in test feature which checks for a short across the remote terminals in order to allow the M43-APD to operate with the Government's prototype battery box.</li> </ul>

### **3. ETG DESIGN VERIFICATION TESTING: HIGH/LOW TEMPERATURE AND SIMULANT SENSITIVITY**

Design verification testing of the two prototype detectors was performed at ETG from March through May 1998. The testing included climatic testing (high temperature storage/operation, low temperature storage/operation), and simulant response testing.

Climatic testing was performed in ETG's environmental chambers by conditioning the detectors in a shutdown state, and then performing a startup test. Following startup, the detectors were operated for four hours and confidence tests performed at the end of this period.

Simulant response testing was performed using the standards generator that ETG uses for acceptance testing of the CAM and ICAM-APD. The simulant concentrations are the same as described in the CAM purchase descriptions for a "7-bar H" and "5-bar G" response. The requirement is that the detectors alarm within 10 seconds to these concentrations and then clear to a no-alarm status within two minutes.

The M43-APD detectors passed all design verification testing. Detailed test logs are presented in Table 3 and Table 4.

During high temperature testing, the test data showed a contaminant in the negative mode signature (blister mode). The contaminant interferes with formation of both the negative reference peak and subsequently the ability of the H-simulant from forming a well-defined ion peak. As a result, the detector has reduced sensitivity to the H confidence sample, and as we discovered during the Government's agent vapor testing it has also reduced the sensitivity to HD agent vapor. The source of the contamination appears to be a material within the M43A1 case assembly which is outgassing at high temperatures. The contaminant probably enters the sensor module through the sieve pack assembly, which uses a vent to equalize pressure between the interior volume of the cell and the case interior.

The precise source of the contamination has not yet been isolated, and it is unlikely that a single component will be found which is the sole contributor. Regardless of whether the source of contamination is found, there is one design approach to minimize its impact. The current sieve pack vents to the inside of the case, therefore the sieve breather effect is pulling case air into the sensor. The pneumatics can be modified to vent to the outside of the case, probably through the inlet assembly.

TABLE 3. *Test log, M43-APD design verification testing, detector S/N 980206-4*

<u>DATE</u>		<u>DESCRIPTION</u>	<u>COMMENTS</u>
3/24/98	6:00 PM	STARTUP TEST (AMBIENT)	PASSED
		CONFIDENCE CHECK (AMBIENT)	PASSED
		H/G SIMULANT TEST	PASSED
	7:00 PM	MOVED TO EVC 001, BEGIN COLD SOAK AT -40 C	
3/25/98	12:10 PM	STARTUP (-40 C)	PASSED (NOTE 1)
		CONFIDENCE CHECK (-40 C)	PASSED (NOTE 1)
	5:28 PM	CONFIDENCE CHECK (-30 C)	PASSED (NOTE 1)
3/26/98	1:15 PM	CONFIDENCE CHECK (-30 C)	PASSED (NOTE 1)
	3:15 PM	BEGIN RAMP TO AMBIENT TEMPERATURE	
3/27/98	9:15 AM	STARTUP (AMBIENT)	PASSED
		CONFIDENCE CHECK (AMBIENT)	PASSED

TABLE 3. *Test log, M43-APD design verification testing, detector S/N 980206-4*

NOTE 1 -- ALTHOUGH DETECTOR 4 PASSES THE PERFORMANCE CHECKS, THE SIGNATURES SHOW BROAD-BAND NOISE WHICH EXCEED M43-APD / ICAM-APD ACCEPTANCE CRITERIA. CAUSE WAS ISOLATED TO A GROUND LOOP CREATED BY CONTACT BETWEEN THE IMS SENSOR MODULE AND THE NICKEL PLATING OF THE M43A1 CASETOP. RE-TESTED ON 3/30 TO 4/1.  
(NOTE THAT DETECTOR 4 IS THE FIRST OF TWO GOVERNMENT PROTOTYPES.

3/30/98	3:15 PM	STARTUP (AMBIENT)	PASSED (RE-TEST)
		CONFIDENCE CHECK (AMBIENT)	PASSED (RE-TEST)
		H/G SIMULANT TEST	PASSED (RE-TEST)
	5:45 PM	MOVED TO EVC 001, BEGIN COLD SOAK AT -40 C	
3/31/98	8:38 AM	STARTUP (-40 C)	PASSED (RE-TEST)
		CONFIDENCE CHECK (-40 C)	PASSED (RE-TEST)
	4:30 PM	CONFIDENCE CHECK (-30 C)	PASSED (RE-TEST)
4/1/98	8:35 AM	CONFIDENCE CHECK (-30 C)	PASSED (RE-TEST)
	8:45 AM	BEGIN RAMP TO AMBIENT TEMPERATURE	
	3:00 PM	CONFIDENCE CHECK (AMBIENT)	PASSED (RE-TEST)
5/22/98	4:17 PM	STARTUP (AMBIENT)	PASSED (NOTE 2)
		CONFIDENCE CHECK (AMBIENT)	PASSED
		H/G SIMULANT TEST	PASSED
	6:15 PM	MOVE TO EVC POOL NO. 0277, BEGIN HOT SOAK AT +52 C	
5/26/98	8:57 AM	STARTUP (+52 C)	PASSED
		CONFIDENCE CHECK (+52 C)	PASSED
	1:16 PM	CONFIDENCE CHECK (+52 C)	PASSED

NOTE 2 - FOLLOWING THE SUCCESSFUL COMPLETION OF LOW-TEMPERATURE TESTING, THE TEST PROGRAM WAS INTERRUPTED DUE TO PROBLEMS WITH DETECTOR 5, THE SECOND OF THE TWO GOVERNMENT PROTOTYPES. DURING HIGH-TEMPERATURE TESTING OF DETECTOR 5 (SEE TABLE 4 ENTRY FOR 3/31/98), THERE WAS A CONTAMINANT IN BOTH THE NEGATIVE AND POSITIVE MODES. THE IMPACT OF THE CONTAMINANT WAS TO INCREASE STARTUP TIME BY REDUCING SENSITIVITY TO THE H CONFIDENCE SAMPLE. FOLLOWING AN INVESTIGATION, THE FOLLOWING CORRECTIVE ACTIONS WERE IMPLEMENTED ON BOTH OF THE PROTOTYPE DETECTORS, AND THE TEST PROGRAM WAS RE-STARTED. THE COMPONENTS WERE WASHED AND BAKED, ACTIVATED CHARCOAL WAS ADDED TO THE VENT WITHIN THE SIEVE PACK ASSEMBLY, THE INLET ASSEMBLY WAS REDESIGNED, AND THE H-ALARM THRESHOLD WAS LOWERED.

TABLE 4. *Test log, M43-APD design verification testing, detector S/N 980206-5*

<u>DATE</u>		<u>DESCRIPTION</u>	<u>COMMENTS</u>
3/24/98	6:00 PM	STARTUP TEST (AMBIENT)	PASSED
		CONFIDENCE CHECK (AMBIENT)	PASSED
		H/G SIMULANT TEST	PASSED
	7:00 PM	MOVED TO EVC 001, BEGIN COLD SOAK AT -40 C	
3/25/98	12:10 PM	STARTUP (-40 C)	PASSED
		CONFIDENCE CHECK (-40 C)	PASSED
	5:37 PM	CONFIDENCE CHECK (-30 C)	PASSED
3/26/98	1:32 PM	CONFIDENCE CHECK (-30 C)	PASSED
	3:15 PM	BEGIN RAMP TO AMBIENT TEMPERATURE	
3/27/98	9:30 AM	STARTUP (AMBIENT)	PASSED
		CONFIDENCE CHECK (AMBIENT)	PASSED
3/30/98	5:00 PM	MOVE TO EVC POOL NO. 0277, BEGIN HOT SOAK AT +52 C	
3/31/98	9:30 AM	STARTUP (+52 C)	FAILED (NOTE 3)

NOTE 3 -- DATA AND SIGNATURES SHOW A CONTAMINANT IN THE POSITIVE MODE WHICH PROHIBITS FORMATION OF THE NH<sub>3</sub> REACTANT ION. CAUSE DETERMINED TO BE A LEAK IN THE SIEVE PACK ASSEMBLY. CORRECTIVE ACTION WAS TO REMOVE AND REPLACE THE SIEVE PACK ASSEMBLY. ALSO, CONTAMINANTS IN THE NEGATIVE MODE ARE REDUCING SENSITIVITY TO H CONFIDENCE SAMPLE. CORRECTIVE ACTIONS -- WASHED AND BAKED COMPONENTS, ADDED ACTIVATED CHARCOAL TO VENTS WITHIN THE SIEVE PACK ASSEMBLY, RE-DESIGNED INLET ASSEMBLY AND INLET CAP, LOWERED ALARM THRESHOLD REQUIRED FOR H ALARM. RE-TESTED 5/22 TO 5/26.

5/22/98	5:30 PM	STARTUP (AMBIENT)	PASSED (RE-TEST)
		CONFIDENCE CHECK (AMBIENT)	PASSED
		H/G SIMULANT TEST	PASSED
	6:15 PM	MOVE TO EVC POOL NO. 0277, BEGIN HOT SOAK AT +52 C	
5/26/98	8:40 AM	STARTUP (+52 C)	PASSED
		CONFIDENCE CHECK (+52 C)	PASSED
	1:28 PM	CONFIDENCE CHECK (+52 C)	PASSED



#### 4. GOVERNMENT TESTING, AGENT VAPOR

Two prototype M43-APD detectors were subjected to agent-vapor evaluation testing at the ERDEC surety laboratories from 3 Aug to 18 Aug 1998. ETG personnel were present to support testing, perform maintenance and capture detector digital data. Table 5 summarizes the agent test results.

In general, the M43-APD detectors performed very well. The electronics, pumps, sensor and other hardware operated through the duration of the testing without a single failure. The agent vapor testing showed that the sensitivity and response times for the M43-APD are comparable to those established by ETG's ICAM-APD. Battlefield interference testing also showed that the M43-APD retains the ICAM-APD's high level of interference rejection. Most test trials resulted in proper alarms as expected. The exceptions are described below.

In most cases GD did not alarm at ambient lab temperature (+20 °C). Analysis showed that the GD agent vapor produced strong peaks in the IMS signature, indicating good sensitivity. However, the position of the peak was not within the alarm criteria for GD as defined by the agent detection algorithm. The positions for all IMS peaks (reactant ion reference and agent) were at longer drift times than normal (to the right). This caused the peak location ratios (PLR) to be smaller than normal (to the left). Although these no-alarm conditions could be improved by modifying the GD peak position criteria, the improved agent detection may come at the expense of increased false alarms. Evaluation of interference materials with peaks in this region showed a potential for false alarms. One possibility is that replacing the sieve pack with newly charged one would restore the peak drift times and ratios to their normal values. Any hardware evaluation would require additional effort to isolate the cause of this observation.

In most cases GB alarmed at low temperature (-30 °C), but two misses did occur. The GB peak location ratios were near the lower edge of the defined window. This window could be expanded. Evaluation of interference material peaks showed no new potential GB false alarms in the region of interest. However, as with GD, a hardware evaluation may produce an action for restoring peak positions.

VX detection was very good at all conditions. In the case of ambient temperature, some no-alarms occurred earlier in the day before the concentration of VX was accurately established. Also, prior to VX testing, high concentration HD was performed at 50 mg/m<sup>3</sup> and significant HD peaks were observed, sometimes producing HD alarms before a VX alarm was triggered. As time went on, the residual HD disappeared and VX was detected.

Both H confidence sample and HD agent detection were affected by high temperature operation. The test chamber temperature was +52 °C, while the internal detector temperature was observed to be +53 to +54 °C. In most cases an H-simulant and HD peaks positions were in the HD window, but the amplitudes (SECD) were below the

alarm threshold. The negative reactant ion (Rx-) peak was observed to be a triple peak, rather than the normal single peak. It should be noted that during outdoor interference testing on 31 Aug, the ambient temperature was +34 °C, but because of sun loading the internal detector temperature was measured at +48 to 49 °C. Under these conditions, no triple peak was observed for the Rx- ion and the H confidence sample alarmed consistently with a very strong peak.

TABLE 5. *Summary of Agent Vapor Testing, ERDEC, August 1998*

Date	Agent	Conc. (ug/L)	RH	Temp. (°C)	Det #	Response	Alarm Time (mm:ss)	Clear Time (mm:ss)	Notes
8/3/98	GD	0.091	0%	20	1	NO ALARM			1
8/3/98	GD	0.091	0%	20	1	NO ALARM			1
8/3/98	GD	0.091	0%	20	1	NO ALARM			1
8/3/98	GD	0.091	0%	20	2	NO ALARM			1
8/3/98	GD	0.091	0%	20	2	NO ALARM			1
8/3/98	GD	0.091	0%	20	2	NO ALARM			1
8/4/98	GD	0.122	90	20	1	NO ALARM			1
8/4/98	GD	0.122	90	20	2	NO ALARM			1
8/4/98	GD	0.13	90	20	1	NO ALARM			1
8/4/98	GD	0.13	90	20	2	NO ALARM			1
8/4/98	GD	0.122	90	20	1	NO ALARM			1
8/4/98	GD	0.122	90	20	2	NO ALARM			1
8/4/98	GD	1.017	90	20	1	NRV LOW	01:13	01:54	
8/4/98	GD	1.017	90	20	2	NO ALARM			1
8/4/98	GD	1	90	20	1	NRV LOW	00:10	00:37	
8/4/98	GD	1	90	20	2	NO ALARM			1
8/4/98	GD	1	90	20	1	NRV LOW	00:20	00:47	
8/4/98	GD	1	90	20	1	NRV LOW	00:40		2
8/4/98	GD	1	90	20	2	NO ALARM			1
8/4/98	GD	1	90	20	2	NO ALARM			1
8/5/98	GA	0.104	2	20	1	NRV LOW	00:32	00:30	
8/5/98	GA	0.104	2	20	2	NRV LOW	00:13	00:33	
8/5/98	GA	0.115	2	20	1	NRV LOW	00:19	00:29	
8/5/98	GA	0.115	2	20	2	NRV LOW	00:15	00:30	
8/5/98	GA	0.116	2	20	1	NRV LOW	00:20	00:30	
8/5/98	GA	0.116	2	20	2	NRV LOW	00:10	00:30	
8/5/98	GA	0.14	92	20	1	NRV LOW	00:23	00:18	
8/5/98	GA	0.14	92	20	2	NRV LOW	00:15	00:30	
8/5/98	GA	0.111	92	20	1	NRV LOW	00:25	00:30	
8/5/98	GA	0.111	92	20	2	NRV LOW	00:13	00:29	
8/5/98	GA	0.119	92	20	1	NRV LOW	00:34	00:29	
8/5/98	GA	0.119	92	20	2	NRV LOW	00:14	00:31	

TABLE 5. Summary of Agent Vapor Testing, ERDEC, August 1998

Date	Agent	Conc. (ug/L)	RH	Temp. (°C)	Det #	Response	Alarm Time (mm:ss)	Clear Time (mm:ss)	Notes
8/6/98	GB	0.099	3	20	1	NRV LOW	00:20	00:19	
8/6/98	GB	0.099	3	20	2	NRV LOW	00:18	00:22	
8/6/98	GB	0.113	3	20	1	NRV LOW	00:17	00:20	
8/6/98	GB	0.113	3	20	2	NRV LOW	00:20	00:24	
8/6/98	GB	0.117	3	20	1	NRV LOW	00:17	00:19	
8/6/98	GB	0.117	3	20	2	NRV LOW	00:18	00:19	
8/6/98	GB	0.108	90	20	1	NRV LOW	00:16	00:20	
8/6/98	GB	0.108	90	20	2	NRV LOW	00:18	00:19	
8/6/98	GB	0.109	90	20	1	NRV LOW	00:20	00:20	
8/6/98	GB	0.109	90	20	2	NRV LOW	00:18	00:19	
8/6/98	GB	0.114	90	20	1	NRV LOW	00:15	00:19	
8/6/98	GB	0.114	90	20	2	NRV LOW	00:17	00:19	
8/7/98	HD	1.933	3	20	1	BLS LOW	00:06	00:30	
8/7/98	HD	1.933	3	20	2	BLS LOW	00:03	00:29	
8/7/98	HD	2.12	3	20	1	BLS LOW	00:04	00:29	
8/7/98	HD	2.12	3	20	2	BLS LOW	00:03	00:26	
8/7/98	HD	2.047	3	20	1	BLS LOW	00:06	00:29	
8/7/98	HD	2.047	3	20	2	BLS LOW	00:09	00:27	
8/7/98	HD	2.197	88	20	1	BLS LOW	00:07	00:29	
8/7/98	HD	2.197	88	20	2	BLS LOW	00:07	00:30	
8/7/98	HD	2.154	88	20	1	BLS LOW	00:03	00:29	
8/7/98	HD	2.154	88	20	2	BLS LOW	00:08	00:29	
8/7/98	HD	2.258	88	20	1	BLS LOW	00:04	00:29	
8/7/98	HD	2.258	88	20	2	BLS LOW	00:04	00:26	
8/7/98	HD	36	3	20	1	BLS LOW	00:05	01:10	
8/7/98	HD	36	3	20	2	BLS LOW	00:07	01:03	3
8/7/98	HD	34	3	20	1	BLS LOW	00:06	01:07	
8/7/98	HD	34	3	20	2	BLS LOW	00:02	00:57	
8/7/98	HD	52.917	3	20	1	BLS LOW	00:06	01:30	3
8/7/98	HD	52.917	3	20	2	BLS LOW	00:03	00:59	
8/8/98	VX	?	3	20	1	NRV LOW	01:27	00:11	4, 5
8/8/98	VX	?	3	20	2	NRV LOW	01:48	00:26	4, 5
8/8/98	VX	?	3	20	1	NO ALARM		00:00	4, 5
8/8/98	VX	0.058	3	20	2	NRV LOW	00:25	00:21	
8/8/98	VX	0.058	3	20	1	NRV LOW	00:55	00:26	
8/8/98	VX	0.15	3	20	1	NRV LOW	00:10	00:25	
8/8/98	VX	0.15	3	20	2	NRV LOW	00:13	00:23	
8/8/98	VX	0.29	90	20	1	NO ALARM		00:00	4, 5
8/8/98	VX	0.11	90	20	2	NRV LOW	01:16	00:20	
8/8/98	VX	0.1	90	20	1	NRV LOW	00:38	00:18	
8/8/98	VX	0.1	90	20	1	NRV LOW	00:09	00:25	
8/8/98	VX	0.31	90	20	2	NRV LOW	00:12	00:23	
8/8/98	VX	0.31	90	20	1	NRV LOW	00:02	00:30	
8/8/98	VX	0.31	90	20	1	NRV LOW	00:15	00:24	

TABLE 5. Summary of Agent Vapor Testing, ERDEC, August 1998

Date	Agent	Conc. (ug/L)	RH	Temp. (°C)	Det #	Response	Alarm Time (mm:ss)	Clear Time (mm:ss)	Notes
8/10/98	HD	2.06	25	52	1	NO ALARM			6
8/10/98	HD	2.06	25	52	2	NO ALARM			6
8/11/98	GB	0.112	0	-30	1	NO ALARM			7
8/11/98	GB	0.112	0	-30	2	NRV LOW	00:08	00:22	
8/11/98	GB	0.112	0	-30	1	NO ALARM			7, 8
8/11/98	GB	0.112	0	-30	2	NRV LOW	00:05	00:24	
8/11/98	GB	0.104	0	-30	1	NRV LOW	00:12	00:23	
8/11/98	GB	0.104	0	-30	2	NRV LOW	00:06	00:22	
8/11/98	GB	0.104	0	-30	1	NRV LOW	00:24	00:20	
8/11/98	GB	0.104	0	-30	2	NRV LOW	00:20	00:11	
8/12/98	GD	0.114	0	-30	1	NRV MED	00:16	00:25	
8/12/98	GD	0.114	0	-30	2	NRV MED	00:07	00:25	
8/12/98	GD	0.114	0	-30	1	NRV MED	00:12	00:33	
8/12/98	GD	0.114	0	-30	2	NRV MED	00:07	00:24	
8/12/98	GD	0.114	0	-30	1	NRV MED	00:14	00:25	
8/12/98	GD	0.114	0	-30	2	NRV MED	00:07	00:24	
8/13/98	GB	0.121	29	52	1	NRV LOW	00:20	00:20	
8/13/98	GB	0.121	29	52	2	NRV LOW	00:21	00:21	
8/13/98	GB	0.121	29	52	1	NRV LOW	00:19	00:20	
8/13/98	GB	0.121	29	52	2	NRV LOW	00:20	00:23	
8/13/98	GB	0.125	29	52	1	NRV LOW	00:20	00:20	
8/13/98	GB	0.125	29	52	2	NRV LOW	00:20	00:20	
8/13/98	GB	0.125	29	52	1	NRV LOW	00:16	00:20	
8/13/98	GB	0.125	29	52	2	NRV LOW	00:19	00:20	
8/13/98	GD	0.126	29	52	1	NRV LOW	01:20	00:20	
8/13/98	GD	0.126	29	52	2	NRV LOW	00:08	00:20	
8/13/98	GD	0.126	29	52	1	NRV LOW	00:07	00:20	
8/13/98	GD	0.126	29	52	2	NRV LOW	00:09	00:21	
8/13/98	GD	0.118	29	52	1	NO ALARM			1
8/13/98	GD	0.118	29	52	2	NRV LOW	00:08	00:20	
8/13/98	GD	0.118	29	52	1	NRV LOW	00:14	00:23	
8/13/98	GD	0.118	29	52	2	NRV LOW	00:08	00:21	
8/14/98	VX	0.055	26	52	1	NRV LOW	00:28	00:23	
8/14/98	VX	0.055	26	52	2	NRV LOW	00:08	00:23	
8/14/98	VX	0.055	26	52	1	NRV LOW	00:15	00:26	
8/14/98	VX	0.055	26	52	2	NRV LOW	00:06	00:26	
8/14/98	VX	0.055	26	52	1	NRV LOW	00:30	00:31	
8/14/98	VX	0.055	26	52	2	NRV LOW	00:19	00:26	
8/17/98	HD	2.63	0	0	1	BLS MED	00:07	00:50	
8/17/98	HD	1.93	0	0	2	BLS LOW	00:07	00:46	
8/17/98	HD	1.93	0	0	1	BLS MED	00:06	00:47	
8/17/98	HD	1.93	0	0	2	BLS LOW	00:05	00:33	
8/17/98	HD	1.93	0	0	1	BLS LOW	00:05	00:47	
8/17/98	HD	1.93	0	0	2	BLS LOW	00:04	00:44	

TABLE 5. *Summary of Agent Vapor Testing, ERDEC, August 1998*

Date	Agent	Conc. (ug/L)	RH	Temp. (°C)	Det #	Response	Alarm Time (mm:ss)	Clear Time (mm:ss)	Notes
8/18/98	VX	0.09	0	0	1	NRV LOW	01:27	00:22	
8/18/98	VX	0.09	0	0	2	NRV LOW	00:37	00:23	
8/18/98	VX	0.09	0	0	1	NRV LOW	01:38	00:23	9
8/18/98	VX	0.07	0	0	2	NRV LOW	00:48	00:22	
8/18/98	VX	0.07	0	0	1	NRV LOW	00:49	00:23	
8/18/98	VX	0.07	0	0	2	NRV LOW	00:14	00:28	

#### Notes

1. GD peaks are present, but just outside the alarm window established by the detection algorithm.
2. Cleardown time was not recorded.
3. Detector realarmed following cleardown.
4. VX concentration uncertain.
5. Residual HD peaks observed from previous tests.
6. Multiple peaks in the vicinity of the negative reactant ion shown that there is negative-mode contaminant at +52 °C which reduces the sensitivity to HD. Detector also did not respond to the H confidence sample.
7. GB peaks are present, but just outside the alarm window established by the detection algorithm.
8. Detector alarmed after the agent vapor was removed.
9. Detector recalibrated approximately 1 minute into the challenge, and then alarmed immediately afterward.

### 5. GOVERNMENT TESTING: INTERFERENCES

Two prototype M43-APD detectors were subjected to outdoor interference testing at the ERDEC M-Field test site from 31 Aug to 3 Sep 1998. ETG personnel were present to support testing, perform maintenance and capture detector digital data. Each detector was subjected to three trials of each interference challenge. Time was allowed between each trial for each detector to clear before the next trial. Between each different interference, confidence checks were performed to verify detector operation. On every occasion, both detectors alarmed properly to the confidence sample.

On the first day of testing, the detector operating software had to be modified to make the prototype detectors compatible with the new battery box that ERDEC had developed as a replacement for the BA3517/U. The M43-APD has a built-in test feature which checks the remote terminals for a short in the field wire which connects to the M42 remote alarm. The Government's prototype battery box has a feature which sends voltage across the remote terminals when the battery voltage is low. This feature fools ETG's built-in test into thinking that there is a short across remote terminals.

The Government's prototype battery box has a diode-protected circuit which can be used by the M43-APD built-in test. It is a simple hardware fix which requires only that the positive and negative polarity of the M43-APD test signal be reversed to match the polarity of the Government's circuit.

Table 6 summarizes the interference test results. Most test trials resulted in no false alarms. The exceptions are described below.

JP8 fuel vapor caused false alarms in 3 of 6 trials. JP8 produced two peaks, both of which occurred in VX windows and displayed a false alarm. The peak second difference amplitudes (SECD) were not large, but were higher than the VX alarm threshold. The VX peak SECD criteria is quite low to accommodate the required low concentration (0.04 mg/m<sup>3</sup>) of purified VX. M56 turbine exhaust caused false alarms in 4 of 6 trials. All of these alarms occurred immediately after the turbine was shut off at the end of each trial. Also, M56 exhaust did not produce any peaks until shut down. It was learned that the M56 turbine purges residual JP8 fuel at shut down. Examination of IMS feature data revealed that the peaks produced by the assumed M56 exhaust were in the same positions as for JP8 fuel vapor and caused VX alarms. Thus, the M56 turbine exhaust did not cause false alarms, but the residual JP8 did.

DS2 caused a false alarm in 1 of 6 trials. Two peaks were observed in the positive mode. One had a large amplitude, but was not in any agent window. The second had a small amplitude and was in a GB window. The peak SECD was below the GB alarm criteria in most cases, but occasionally grew to a value slightly above the alarm threshold and caused an alarm.

Yellow smoke false alarmed in 6 of 6 trials HD, L, VX and GB; violet smoke alarmed 3 of 6 times as L; and green smoke alarmed 6 of 6 times as GB. All colored smokes created interference peaks in both the negative and positive detection polarities. Yellow smoke had large peaks in the HD and Lewisite windows as well as large peaks in the GB and VX windows. Violet smoke produced a large peak in the Lewisite window. Green smoke produced a large peak in a GB window. Green smoke had significant effect on the IMS spectrum, causing broad unresolved peaks and sometimes eliminating the positive reactant ion (Rx<sup>+</sup>) completely.

TABLE 6. *Battlefield interference testing of M43-APD, 31 Aug to 3 Sep 1998*

INTERFERENCE	DISTANCE (FEET)	FALSE ALARMS / TRIALS	TIME OF EXPOSURE (MIN.)	Notes
GAS EXHAUST	10	0/6	2	
DIESEL EXHAUST	10	0/6	2	
GAS VAPOR	5	0/6	2	
BURNING GAS	15	0/6	3	
DIESEL VAPOR	5	0/6	2	
BURNING DIESEL	15	0/6	2	
KEROSENE VAPOR	5	0/6	2	
BURNING KEROSENE	15	0/6	2	
JP8 FUEL VAPOR	5	3/6	2	VX
JP8 BURNING	15	0/6	2	
BURNING CARDBOARD	15	0/6	2	
BURNING WOOD	35	0/6	2	
DOUSED FIRE	22	0/6	2	
BURNING TIRE	22	0/6	2	
WHITE PHOSPHOROUS	50	0/6	2	
YELLOW SMOKE	50	6/6	2	HD, L, VX, GB
VIOLET SMOKE	50	3/6	2	L
RED SMOKE	50	0/6	2	
GREEN SMOKE	50	6/6	2	GB
HTH	5	0/6	2	
BLEACH	10	0/6	2	
SUPER TROPICAL BLEACH	10	0/6	2	
DS2	10	1/6	2	GB
AFFF	10	0/6	2	
BREAKFREE (CLP)	3	0/6	2	
RBC	3	0/6	2	
LSA OIL	3	0/6	2	
INSECT REPELLENT AEROSOL	3	0/6	2	

TABLE 6. *Battlefield interference testing of M43-APD, 31 Aug to 3 Sep 1998*

INTERFERENCE	DISTANCE (FEET)	FALSE ALARMS / TRIALS	TIME OF EXPOSURE (MIN.)	Notes
INSECT REPELLENT LOTION	3	0/6	2	
INSECTICIDE	3	0/6	2	
M56 TURBINE EXHAUST	25	4/6	2	VX, note 1
M56 FOG OIL SMOKE	50	0/6	2	
M76 GRENADE	20	0/6	5 (SECONDS)	
<b>TOTALS</b>				
ALARMS / TRIALS		23/198	11.6%	
MATERIALS CAUSING ALARMS		6/33	18.2%	

Notes:

1) Post alarm. False alarm occurred when turbine shut off and JP8 fuel is automatically purged from system. Since this is a false alarm to JP8 vapor, the materials causing alarm becomes 5/33 or 15.2%.

## 6. TEST INCIDENT REPORTS

During the testing, five test incident reports (TIR) were generated. Detailed discussions are given in the following pages. A summary is provided in Table 7, below.

TABLE 7. *Summary of Test Incident Reports.*

<b><u>TIR No.</u></b>	<b><u>Description</u></b>
1	Signal shows excessive peak-to-peak noise during low-temperature operation.
2	Detector did not start up within 30 minutes following hot storage.
3	Detectors do not alarm to GD vapor.
4	Detectors will not alarm to H confidence sample or HD vapor following hot storage.
5	Detectors display Remote Alarm Error when connected to prototype battery boxes.



### **Test Incident Report #1**

**Program:** DAAM01-97-C-0033 M43A1 Upgrade and Feasibility Analysis

**Reported by:** Glenn Weaver

**Equipment:** 2428980 M43-APD Chemical Agent Detector

**S/N:** 980206-4

**Date:** March 25, 1998

**Test Location:** ETG Environmental Chamber No. EVC-001

**Nature of Operation:** Startup at -40°C, following 17 hours of storage at -40°C

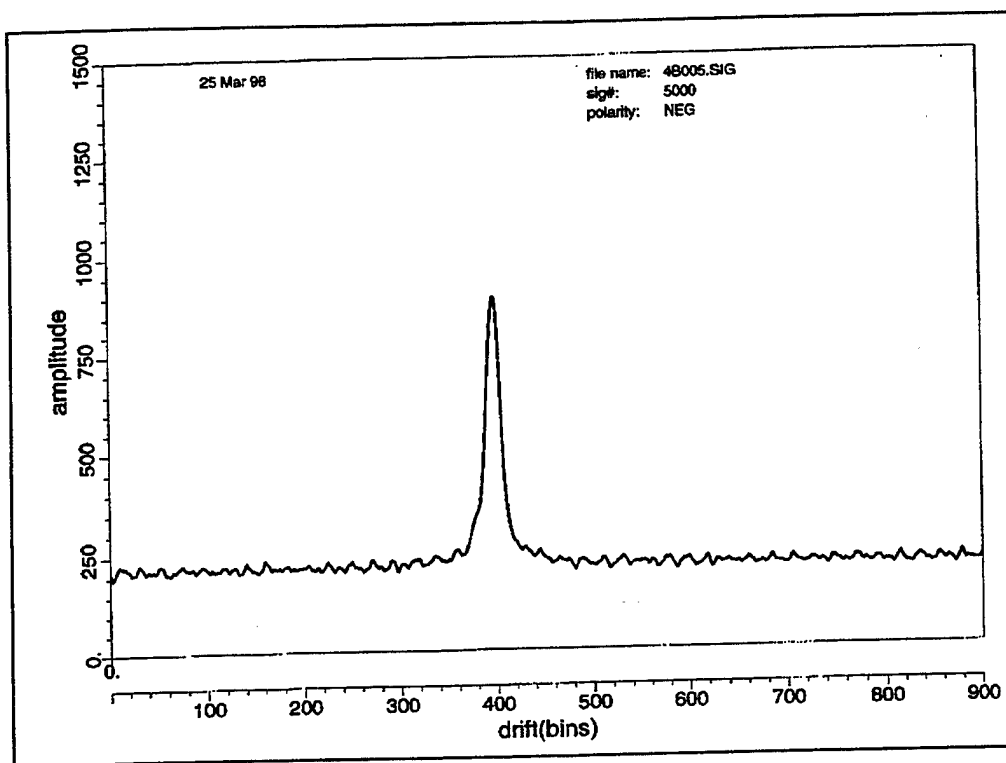
**Problem:** Signal shows excessive peak-to-peak noise during low-temperature operation.

**Discussion:** Following low-temperature storage, the detector was started up at -40 °C. The detector successfully started and alarmed to the confidence sample, but the oscilloscope showed a broadband noise which appeared to exceed the acceptance test criteria. The signature plots confirmed this.

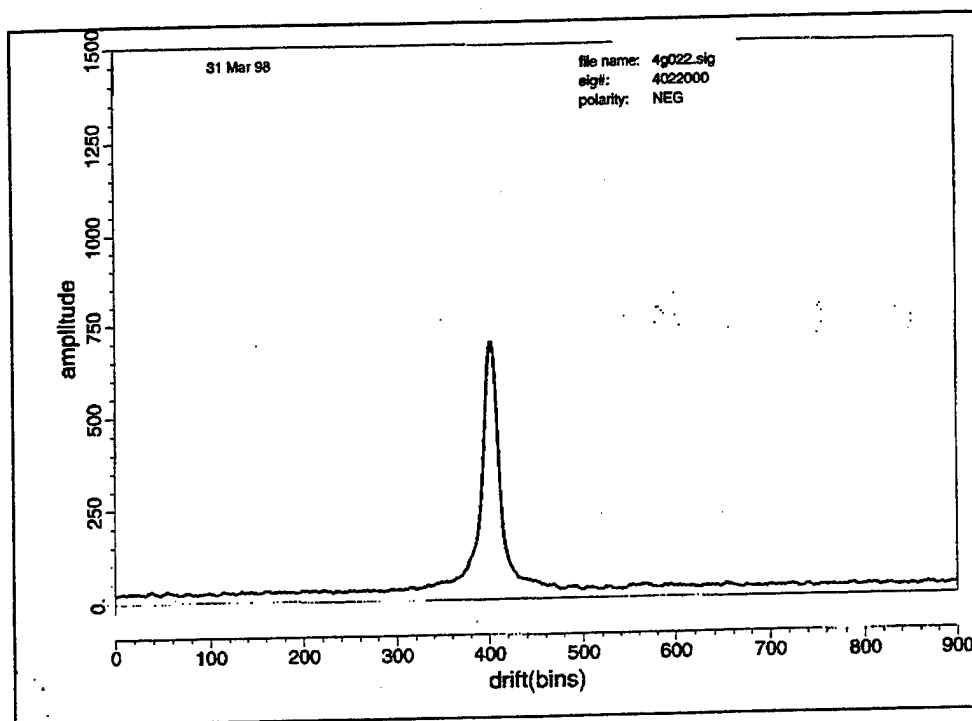
**Repair Action:** Removed the nickel plating from the inside surface of the casetop in the immediate vicinity of the hole in the casetop where the inlet assembly passes through.

**Cause of Problem:** The cause of noise was isolated to a ground loop created by contact between the IMS sensor module and the nickel plating of the M43A1 casetop. The contact was occurring at the point where the aluminum inlet housing goes through the case top.

**Corrective Action:** The short-term solution was to scrape away the nickel plating from around the hole in the casetop where the inlet passes through. Long-term design solutions are to isolate the sensor using an electrically-insulating gasket, or to improve the tolerance stackup so that there is no contact with the nickel plating.



Detector 980206-4, low-temperature storage/operation; signatures taken during operation at -40 °C show excessive broad-band noise.



Detector 980206-4, low-temperature storage/operation; signatures taken during operation at -40 °C following repair. Cause of the noise was isolated to a ground loop due to contact between the IMS sensor and the nickel plating in the casetop

## **Test Incident Report #2**

**Program:** DAAM01-97-C-0033 M43A1 Upgrade and Feasibility Analysis

**Reported by:** Jeff Siebert

**Equipment:** 2428980 M43-APD Chemical Agent Detector

**S/N:** 980206-5

**Date:** March 31, 1998

**Test Location:** ETG Environmental Chamber Pool No. 0277

**Nature of Operation:** Startup at +52°C, following 16 hours of storage at +52°C

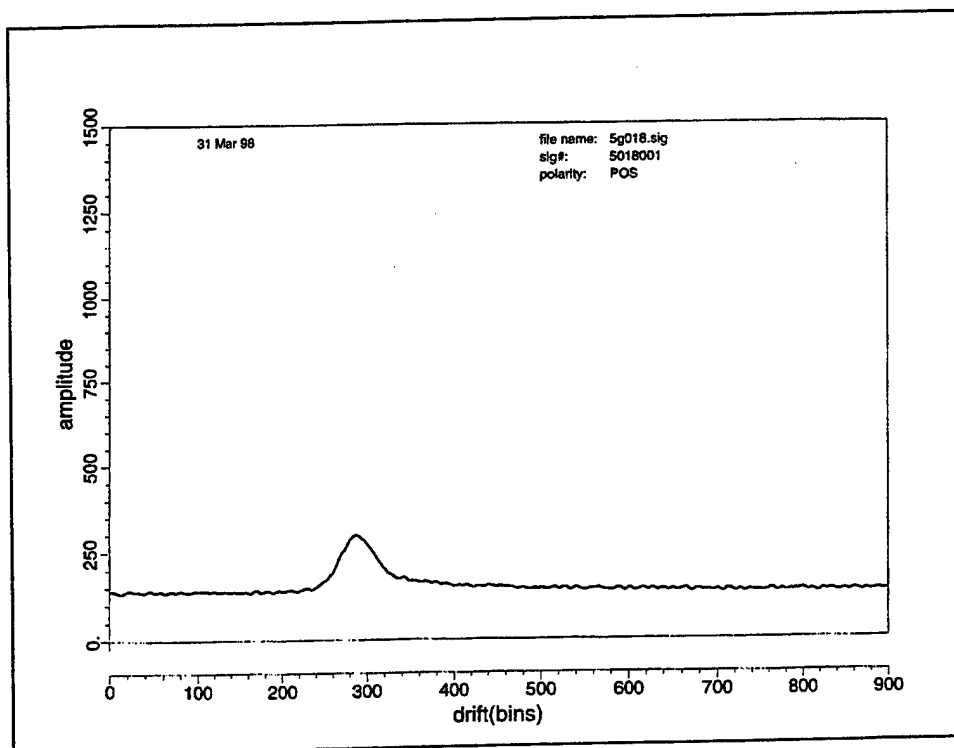
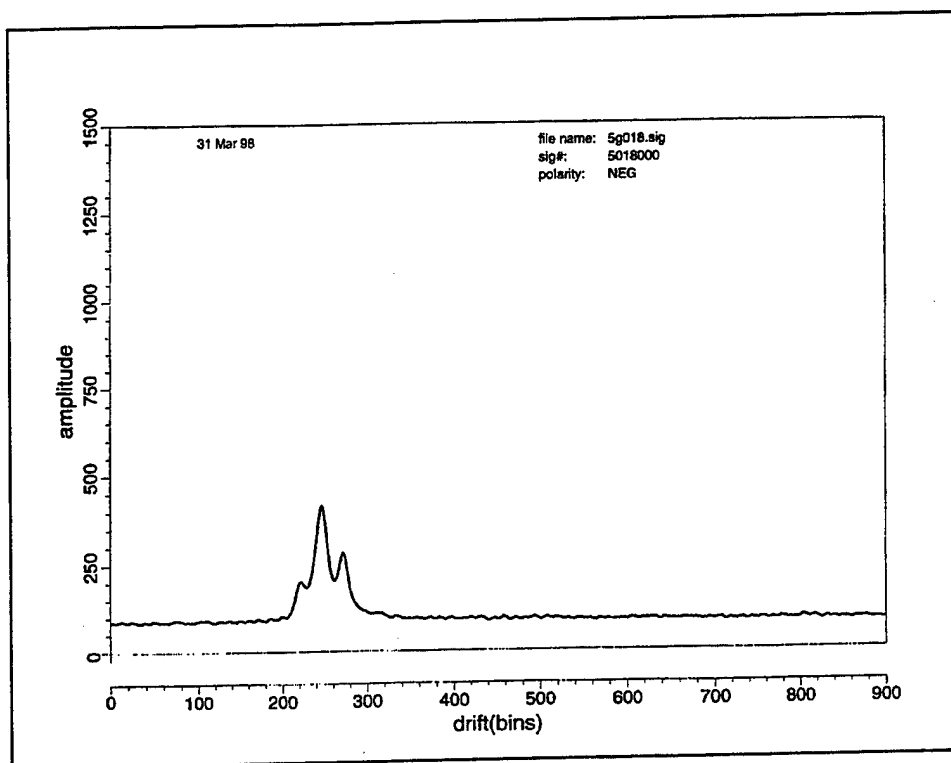
**Problem:** Detector did not start up within 30 minutes following hot storage.

**Discussion:** Following non-operational storage at +52 °C, the detector was uncapped and power turned on. After 5 minutes in STANDBY, the detector had not normalized and displayed CAL ERR (failure to calibrate). After 30 minutes the detector still had not calibrated and the test was stopped.

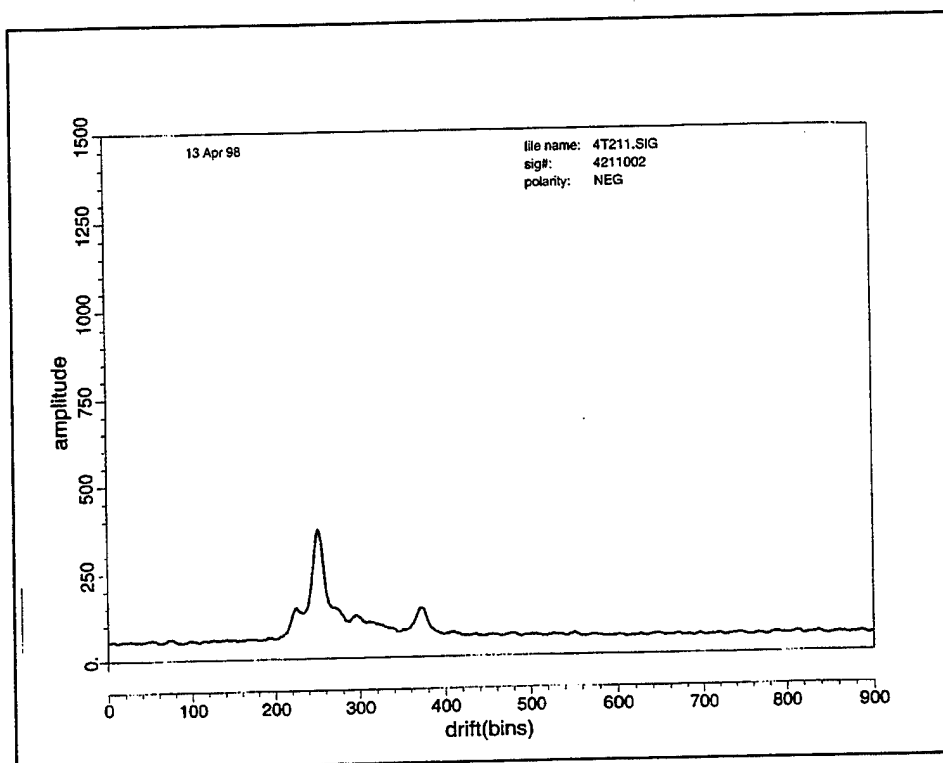
**Repair Action:** Washed and baked all components, added activated charcoal to vents within the sieve pack assembly, replaced the sieve pack assembly due to suspected leak, redesigned the inlet assembly and inlet cap, and lowered the alarm threshold required for H alarm.

**Cause of Problem:** The cause of the failed startup was a contaminant in the positive mode which prevented the positive reference ion peak ( $\text{NH}_3$ ) from forming. When a reference ion peak is not present, the detector will not calibrate. In addition, there was a contaminant in the negative mode signature which interferes with formation of both the negative reference peak and subsequently the ability of the H-simulant from forming a well-defined ion peak. As a result, the detector will not alarm to the H confidence sample because the second difference amplitude of the H-simulant peak is below the alarm threshold. The source of the contamination appears to be a material within the M43A1 case assembly which is outgassing at high temperatures. The contaminant probably enters the sensor module through the sieve pack assembly, which uses the vent to equalize pressure between the interior volume of the cell and the case interior.

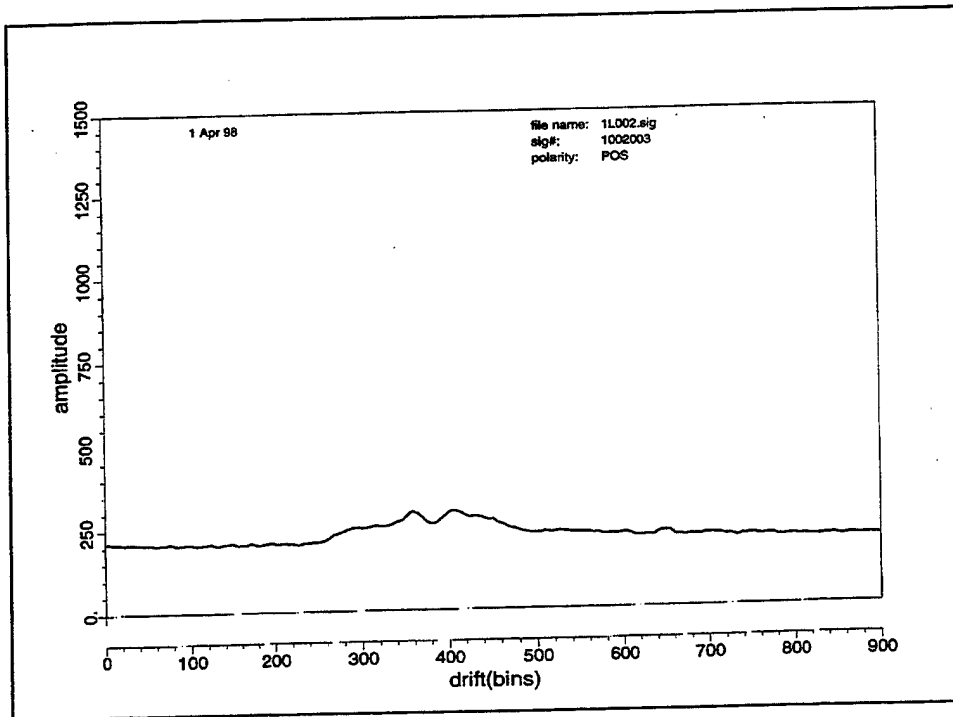
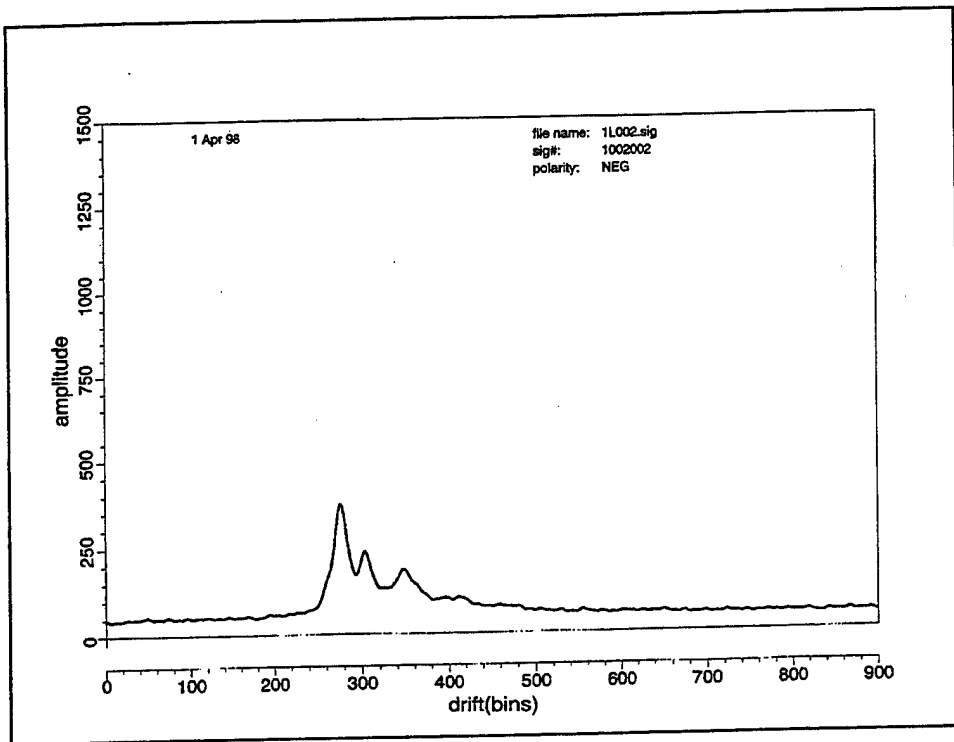
**Corrective Action:** The precise source of the contamination has not yet been isolated, and it is unlikely that a single component will be found which is the sole contributor. Regardless of whether the source of contamination is found, there is one design approach to minimize its impact. The current sieve pack vents to the inside of the case, therefore the sieve breather effect is pulling case air into the sensor. The pneumatics can be modified to vent to the outside of the case, probably through the inlet assembly.



Detector 980206-5, high-temperature storage/operation; signatures taken during backflush at +52 °C, approximately 30 minutes after initial power. Detector was unable to calibrate following storage at +52 °C for 20 hours; the cause is a contaminant in the positive mode which is preventing the  $\text{NH}_3$  ion peak from forming.



Detector 980206-4, high-temperature storage/operation; signature of an H confidence sample taken during operation at + 52 °C, 15 minutes after initial power on following 90 hours of storage at +52 °C. Detector does not alarm to the H confidence sample because the second difference amplitude of the H-simulant ion peak is SECD=266, which is below the alarm threshold of SECD=500.



Signatures of an air sample drawn from the interior of detector 980206-5 after the detector had been stored at +52 °C for 16 hours. Sample was acquired by attaching a 1-ft Viton tube to the inlet of detector 980206-1, just cracking open detector case, and inserting the Viton tube inside the case. Long startup times are being caused by contaminants which build up inside the M43A1 cases at high temperatures and are working their way inside the IMS closed loop system.

### Test Incident Report #3

**Program:** DAAM01-97-C-0033 M43A1 Upgrade and Feasibility Analysis

**Reported by:** George Lozos

**Equipment:** 2428980 M43-APD Chemical Agent Detector

**S/N(s):** 980206-4 and 980206-5

**Date:** Aug 3, 1998

**Test Location:** ERDEC Surety Lab Building E3510

**Nature of Operation:** Agent vapor testing at room temperature

**Problem:** Detectors do not alarm to GD vapor

**Discussion:** On the first day of agent vapor testing, the detectors did not alarm to GD at ambient lab temperature (+20 °C).

**Repair Action:** No repairs were made.

**Cause of Problem:** GD agent vapor produced strong peaks in the IMS signature, indicating good sensitivity. However, the position of the peak was not within the alarm criteria for GD as defined by the agent detection algorithm. The positions for all IMS peaks (reactant ion reference and agent) were at longer drift times than normal (to the right). This caused the peak location ratios (PLRs) to be smaller than normal (to the left).

**Corrective Action:** These no-alarm conditions could be improved by modifying the GD peak position criteria, but the improved agent detection may come at the expense of increased false alarms. Evaluation of interference materials with peaks in this region showed a potential for false alarms. One possibility is that replacing the sieve pack with newly charged one would restore the peak drift times and ratios to their normal values. Any hardware evaluation would require additional effort to isolate the cause of this observation.

### Test Incident Report #4

**Program:** DAAM01-97-C-0033 M43A1 Upgrade and Feasibility Analysis

**Reported by:** Glenn Weaver

**Equipment:** 2428980 M43-APD Chemical Agent Detector

**S/N(s):** 980206-4 and 980206-5

**Date:** Aug 10, 1998

**Test Location:** ERDEC Surety Lab Building E3510

**Nature of Operation:** Hot-temperature startup following storage at +52 °C

**Problem:** Detectors will not alarm to H confidence sample or HD vapor following hot storage.

**Discussion:** Detectors had been shutdown at ambient room temperature for 40 hours following VX vapor testing, also at ambient room temperature. At 7:30 am the test crew ramped the environmental chamber to +52 °C with detectors in shutdown state. Detectors were powered on after 2 hours of storage. Detectors were able to calibrate and successfully alarm to the G confidence sample, but did not alarm to the H-confidence sample or the HD vapor at 2.0 ug/L.

**Repair Action:** None. When detectors were removed from the chamber, the signatures immediately cleaned up and the detectors alarmed to the H confidence sample.

**Cause of Problem:** This problem was first observed during design verification testing at ETG (see TIR #2), but the symptoms were not as pronounced during DVT as they were during agent testing. At ETG, the detectors were stored for 96 hours at +52 °C and were able to alarm to confidence sample. There is a contaminant in the negative mode signature which interferes with formation of both the negative reference peak and subsequently the ability of the H-simulant and HD vapor from forming a well-defined ion peak. As a result, the detector will not alarm to either sample because the second difference amplitude of the H-simulant peak is below the alarm threshold. The source of the contamination appears to be a material within the M43A1 case assembly which is outgassing at high temperatures. The contaminant probably enters the sensor module through the sieve pack assembly, which uses a vent to equalize pressure between the interior volume of the cell and the case interior.

**Corrective Action:** The precise source of the contamination has not yet been isolated, and it is unlikely that a single component will be found which is the sole contributor. Regardless of whether the source of contamination is found, there is one design approach to minimize its impact. The current sieve pack vents to the inside of the case, therefore the sieve breather effect is pulling case air into the sensor. The pneumatics can be modified to vent to the outside of the case, probably through the inlet assembly



### **Test Incident Report #5**

**Program:** DAAM01-97-C-0033 M43A1 Upgrade and Feasibility Analysis

**Reported by:** Glenn Weaver

**Equipment:** 2428980 M43-APD Chemical Agent Detector

**S/N(s):** 980206-4 and 980206-5

**Date:** Aug 3, 1998

**Test Location:** ERDEC M-Field

**Nature of Operation:** Operation with Government prototype battery boxes

**Problem:** Detectors display Remote Alarm Error when connected to prototype battery boxes.

**Discussion:** ERDEC has developed a new battery box as a replacement for the BA3517/U. When the detectors were connected to the new batteries, the built-in test detected a short across the remote terminals and subsequently displayed the error message. When connected to the original BA3517/U, the detectors do not display this error.

**Repair Action:** Downloaded new software version M502d, which disables the built-in test for a short across the remote terminals.

**Cause of Problem:** The Government's new battery has a feature which sends voltage across the remote terminals when the battery voltage is low. This feature fools ETG's built-in test into thinking that there is a short across the remote terminals.

**Corrective Action:** The Government's new battery box has a diode-protected circuit which can be used by the M43-APD built-in test. It is a simple hardware fix which requires only that the positive and negative polarity of the M43-APD test signal be reversed to match the polarity of the Government's circuit.

## 7. CONCLUSIONS

Over a six-month period of testing the prototype M43-APD Chemical Agent Detector, the results have been very favorable. The main objective in this feasibility study was to demonstrate that ETG's IMS-based sensor module and agent-detection algorithm can be successfully integrated into the M43A1 detector. This objective has been met. The ICAM cell, APD electronics, power supplies, display, sieve pack, manifold, and communication ports were each successfully repackaged to fit within the M43A1 case assembly. The design is essentially complete and is ready for transition to production; M43A1 detectors can be refurbished economically and in large quantities. The M43-APD operator interface has been simplified to require only two steps; plug in the power and perform a confidence test.

There were no hardware (pumps, cell, electronics) failures reported for any components during either the design verification testing or the Government evaluation testing. On each day during the Government's testing, the M43-APD detectors were ready to go, which is a reflection of the maturity of ETG's APD sensor technology. From this aspect the M43-APD design should be considered a low risk.

Testing also showed that our agent-detection algorithm, which has been tested on numerous occasions by the Government, is directly transferable from the ICAM-APD to the M43-APD. Again this is a reflection of the maturity of the proposed upgrade.

Despite the overall success of the detectors during this test program, there were two problems encountered during agent-vapor testing which require some discussion. First, the detectors did not alarm to GD vapor at ambient lab temperature (+20 °C). ETG's analysis of this problem showed that the GD agent vapor was producing strong peaks in the IMS signature, indicating good sensitivity. The position of the peaks, however, was outside of the alarm windows that are defined by the agent detection algorithm. These no-alarm conditions can be improved with modification to the detection algorithm, but the improved agent detection may come at the expense of increased false alarms.

From our past experience, we know that insect repellents produce IMS peaks in the vicinity of the GD peaks, and that expanding the alarm windows for GD may produce false alarms to insect repellents. With this in mind, ETG used laptop computers during M-Field testing to collect IMS signatures of the various materials, including insect repellents, in order to make a quantitative evaluation of the impact of widening the GD alarm windows. The data showed that the insect repellents produce peaks close to the GD windows, but none had amplitudes which would have produced an alarm, even if the GD windows are widened to the point where GD would have produced alarms in the agent vapor tests.

Also during agent-vapor testing, the M43-APD detectors did not alarm to HD at an elevated temperature of +52 °C. The signature data taken during these tests shows that there is a contaminant in the negative-mode signature that is impeding the formation of a

strong reactant ion, with a corresponding reduction in the sensitivity to HD. ETG can not be sure, but we believe that this contaminant is a material which is outgassing from the M43A1 case assemblies. The contaminant peaks disappeared almost immediately after the detectors were removed from the environmental chambers and returned to room temperature. It is important to note that the contaminant does not affect blister-agent detection at lower temperatures and that nerve-agent detection is not affected.

During the first day of M-Field testing, the air temperature was 90 °F and the detectors were operated in the full sun. The internal temperature of the detector is continuously monitored by the operating software; the test data from M-Field measured the internal temperature at +48 °C, which is only 6 °C lower than the internal temperature measured during the HD testing. The M-Field test signatures do not show the negative-mode contaminant and they responded to the confidence samples 100% of the time. In other words, the contaminant is only affecting operation in the extreme high-temperature conditions.

The contamination is an important failure which ETG has taken very seriously. The precise source of the contamination has not yet been isolated, and it is unlikely that a single component will be found which is the sole contributor. Regardless of whether the source of contamination is found, there is one design approach to minimize its impact. The current sieve pack vents to the inside of the case, therefore the sieve-breather effect pulls case air into the sensor. The pneumatics can be modified to vent to the outside of the case, probably through the inlet assembly.

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## **APPENDIX A. ETG DESIGN VERIFICATION TEST DATA**

Blank

### Startup Test Checklist and Test Data Sheet

Detector S/N 980206-4 Date: 3-24-98

Software Ver. 502-1 Time: 18:00

Location: CAM CLEANROOM

#### 1. Initial Power On

- A. Uncap the air inlet and air exhaust. Place charcoal filter over the inlet.
- B. Connect communication cable and begin "Logall" file. 4A001.DAT
- C. Turn horn volume to full (clockwise)
- D. Connect power and begin stopwatch.
- E. Verify startup sequence.

	Pass	Fail
Display shows M43-APD	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows the Software Version	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows LED TEST followed by test patterns	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows HORNTTEST and horn beeps twice	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows SELFTEST	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows STANDBY and backflush begins	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows READY within 30 minutes after startup	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Record Time <u>2:39</u>		
Display goes blank approx. 15 seconds after READY	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Tested by: 

Date 3-24-98

### Confidence Test Data Sheet

Detector S/N 980206-4      Date: 3-24-96  
 Software Ver. 502-1      Time: 18:05  
 Location: CAM CLEARROOM

1. Connect communications cable and begin "Logall"

A. Record datafile name 4A001.DAT  
 (Attach copy of data with test records)

B. Use menu to turn on display (optional)

4A002.SIG      F-AIR  
                          H 15  
                          G 15

2. "H" Simulant Test

C. Alarm response

Challenge Time 1 sec

Time to Alarm 4 sec

Horn Sounds

Display correctly identifies Blister (Note 1)

Record response(s) BLST MED

NERV MED

Cleardown less than 5 minutes after alarm

Record cleardown time 50 SEC

<u>Pass</u>	<u>Fail</u>
N/A	
N/A	
<u>✓</u>	
<u>✓</u>	
<u>✓</u>	

Note 1 -- Detector must alarm either BLS or BLS/NRV

3. "G" Simulant Test

D. Alarm response

Challenge Time 1 sec

Time to Alarm 5 sec

Horn Sounds

Display correctly identifies Nerve (Note 2)

Record response(s) NERV LOW

BLST LOW

Cleardown less than 5 minutes after alarm

Record cleardown time 37 SEC

Pass	Fail
N/A	
N/A	
<u>✓</u>	
<u>✓</u>	
<u>✓</u>	

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by: 

Date 3-24-98



# H/G Simulant Test Data Sheet

Detector S/N 980206-4 Date: 3-24-98  
 Software Ver. 502-1 Time: 18:05 18:15  
 Location: CAM CLEAN ROOM 18:24-98

## 1. Connect communications cable and begin "Logall"

A. Record datafile name 4A001.DAT  
 (Attach copy of data with test records)

4A003.SIG F-AIR  
 H 10 S  
 G 10 S

B. Use menu to turn on display (optional)

## 2. "H" Simulant Test

C. Challenge detector for 10 seconds using CAM "H" Simulant generator (7 bars)

D. Alarm response

Pass Fail

Challenge Time 3 sec

N/A

Time to Alarm 25 3 sec

N/A

Horn Sounds 18:24-98

☒

Display correctly identifies Blister (Note 1)

☒

Record response(s) BLST LOW

Cleardown less than 5 minutes after alarm

☒

Record cleardown time 25

Note 1 -- Detector must alarm either BLS or BLS/NRV

## 3. "G" Simulant Test

E. Challenge detector for 10 seconds using CAM "H" Simulant generator (7 bars)

F. Alarm response

Pass Fail

Challenge Time 4 sec

N/A

Time to Alarm 4 sec

N/A

Horn Sounds

☒

Display correctly identifies Nerve (Note 2)

☒

Record response(s) NERV MED

Cleardown less than 5 minutes after alarm

☒

Record cleardown time 36

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by: [Signature]

Date 3-24-98

# Startup Test Checklist and Test Data Sheet

Detector S/N 980206-4 Date: 3-25-98

Software Ver. 5.02A-1 Time: 12:10:19

Location: EVC-001 STARTUP @ -40°C

## 1. Initial Power On

- A. Uncap the air inlet and air exhaust. Place charcoal filter over the inlet.
- B. Connect communication cable and begin "Logall" file. 48004.DAT
- C. Turn horn volume to full (clockwise)
- D. Connect power and begin stopwatch.
- E. Verify startup sequence.

	Pass	Fail
Display shows M43-APD	<u>✓</u>	<u>      </u>
Display shows the Software Version	<u>✓</u>	<u>      </u>
Display shows LED TEST followed by test patterns	<u>✓</u>	<u>      </u>
Display shows HORNTTEST and horn beeps twice	<u>✓</u>	<u>      </u>
Display shows SELFTEST	<u>✓</u>	<u>      </u>
Display shows STANDBY and backflush begins	<u>✓</u>	<u>      </u>
Display shows READY within 30 minutes after startup	<u>✓</u>	<u>      </u>
Record Time <u>10:35</u>		
Display goes blank approx. 15 seconds after READY	<u>✓</u>	<u>      </u>

Tested by: Glen Weaver

Date 3-25-98

### Confidence Test Data Sheet

Detector S/N 980206-4 Date: 3-25-98  
Software Ver. 5.02 A-1 Time: \_\_\_\_\_  
Location: EVC-001 STARTUP @ -40°C

1. Connect communications cable and begin "Logall"

- A. Record datafile name 4B004.DAT  
(Attach copy of data with test records)
- B. Use menu to turn on display (optional)

2. "H" Simulant Test

	Pass	Fail
C. Alarm response		
Challenge Time <u>1</u> sec	N/A	
Time to Alarm <u>6</u> sec	N/A	
Horn Sounds	<u>✓</u>	
Display correctly identifies Blister (Note 1)	<u>✓</u>	
Record response(s) <u>BLS MED</u>		
Cleardown less than 5 minutes after alarm	<u>✓</u>	
Record cleardown time _____		

Note 1 -- Detector must alarm either BLS or BLS/NRV

3. "G" Simulant Test

	Pass	Fail
D. Alarm response		
Challenge Time _____ sec	N/A	
Time to Alarm <u>7</u> sec	N/A	
Horn Sounds	<u>✓</u>	
Display correctly identifies Nerve (Note 2)	<u>✓</u>	
Record response(s) <u>NRV MED</u>		
Cleardown less than 5 minutes after alarm	<u>✓</u>	
Record cleardown time <u>0:25</u>		

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by: Glenn E. St. Jean Date: 3-25-98

# Confidence Test Data Sheet

Detector S/N 980206-4

Date: 3-25-98

Software Ver. 5.02A-1

Time: 17:28

Location: EVC-001

## 1. Connect communications cable and begin "Logall"

A. Record datafile name 4C007.DAT  
(Attach copy of data with test records)

DETECTOR IS ALARMING  
NERVE LOW -  
INTERMITTENT W/ FILTER  
ON.

B. Use menu to turn on display (optional)

## 2. "H" Simulant Test

### C. Alarm response

Challenge Time 5 sec

Time to Alarm 5 sec

Horn Sounds

Display correctly identifies Blister (Note 1)

Record response(s) BLS MED

Cleardown less than 5 minutes after alarm

Record cleardown time 1'30"

Pass

Fail

N/A

N/A

✓

✓

✓

Note 1 -- Detector must alarm either BLS or BLS/NRV

## 3. "G" Simulant Test

### D. Alarm response

Challenge Time 2 sec

Time to Alarm 5 sec

Horn Sounds

Display correctly identifies Nerve (Note 2)

Record response(s) NRV LOW

50 sec

Cleardown less than 5 minutes after alarm

Record cleardown time 0:50

Pass

Fail

N/A

N/A

✓

✓

✓

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by:

[Signature]

Date

3-25-98

### Confidence Test Data Sheet

Detector S/N 980206-4      Date: 3-26-98  
 Software Ver. 5.02A-1      Time: 13:15  
 Location: EVC-001

1. Connect communications cable and begin "Logall"

- A. Record datafile name 4D013.DAT  
 (Attach copy of data with test records)
- B. Use menu to turn on display (optional)

2. "H" Simulant Test

	<u>Pass</u>	<u>Fail</u>
C. Alarm response		
Challenge Time <u>2</u> sec	N/A	
Time to Alarm <u>4</u> sec	N/A	
Horn Sounds	<u>✓</u>	
Display correctly identifies Blister (Note 1)	<u>✓</u>	
Record response(s) <u>BLS MED</u>		
Cleardown less than 5 minutes after alarm	<u>✓</u>	
Record cleardown time <u>2:45</u>		

Note 1 -- Detector must alarm either BLS or BLS/NRV

3. "G" Simulant Test

	Pass	Fail
D. Alarm response		
Challenge Time <u>1</u> sec	N/A	
Time to Alarm <u>1</u> sec	N/A	
Horn Sounds	<u>✓</u>	
Display correctly identifies Nerve (Note 2)	<u>✓</u>	
Record response(s) <u>NRV LOW</u>		
Cleardown less than 5 minutes after alarm	<u>✓</u>	
Record cleardown time <u>1:30</u>		

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by:       Date: 3-26-98

### Startup Test Checklist and Test Data Sheet

Detector S/N 980206-4

Date: 3-27-98

Software Ver. 5.02A-1

Time: 9:15 AM

Location: CAM CLEAN Room

#### 1. Initial Power On

- A. Uncap the air inlet and air exhaust. Place charcoal filter over the inlet.
- B. Connect communication cable and begin "Logall" file. 4E00015.DAT
- C. Turn horn volume to full (clockwise)
- D. Connect power and begin stopwatch.
- E. Verify startup sequence.

	Pass	Fail
Display shows M43-APD	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows the Software Version	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows LED TEST followed by test patterns	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows HORNTTEST and horn beeps twice	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows SELFTEST	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows STANDBY and backflush begins	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows READY within 30 minutes after startup	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Record Time <u>2:39</u>		
Display goes blank approx. 15 seconds after READY	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Tested by: Mike W.

Date 3-27-98

# Confidence Test Data Sheet

Detector S/N 980206-4 Date: 3-27-98  
 Software Ver. 2.5.02A-1 Time: 9:18  
 Location: CAM CLEAN ROOM

## 1. Connect communications cable and begin "Logall"

- A. Record datafile name 4E015 4E015.DAT  
 (Attach copy of data with test records)  
 B. Use menu to turn on display (optional)

## 2. "H" Simulant Test

	Pass	Fail
C. Alarm response		
Challenge Time <u>1</u> sec	N/A	
Time to Alarm <u>5</u> sec	N/A	
Horn Sounds	<u>✓</u>	
Display correctly identifies Blister (Note 1)	<u>✓</u>	
Record response(s) <u>NRV LOW</u>		
<u>BLS MED</u>		
Cleardown less than 5 minutes after alarm	<u>✓</u>	
Record cleardown time <u>28 SEC</u>		

Note 1 -- Detector must alarm either BLS or BLS/NRV

## 3. "G" Simulant Test

	Pass	Fail
D. Alarm response		
Challenge Time <u>1</u> sec	N/A	
Time to Alarm <u>4</u> sec	N/A	
Horn Sounds	<u>✓</u>	
Display correctly identifies Nerve (Note 2)	<u>✓</u>	
Record response(s) <u>NRV HI</u>		
Cleardown less than 5 minutes after alarm	<u>✓</u>	
Record cleardown time <u>21 SEC</u>		

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by: Allen W. Wang Date: 3-27-98

### Startup Test Checklist and Test Data Sheet

Detector S/N 980206-4 Date: 3-30-98  
Software Ver. 5.02A-1 Time: 15:15  
Location: CAM CLEAN ROOM

#### 1. Initial Power On

- A. Uncap the air inlet and air exhaust. Place charcoal filter over the inlet.
- B. Connect communication cable and begin "Logall" file. 4F017.DAT
- C. Turn horn volume to full (clockwise)
- D. Connect power and begin stopwatch.
- E. Verify startup sequence.

	Pass	Fail
Display shows M43-APD	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows the Software Version	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows LED TEST followed by test patterns	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows HORNTTEST and horn beeps twice	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows SELFTEST	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows STANDBY and backflush begins	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows READY within 30 minutes after startup	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Record Time <u>2:38"</u>		
Display goes blank approx. 15 seconds after READY	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Tested by: [Signature] Date 3/30/98



# Confidence Test Data Sheet

Detector S/N 980206-4 Date: 3-30-98  
 Software Ver. 5.02A-1 Time: 15:20  
 Location: CAM CLEAN ROOM

## 1. Connect communications cable and begin "Logall"

- A. Record datafile name 4F017.DAT  
 (Attach copy of data with test records)  
 B. Use menu to turn on display (optional)

## 2. "H" Simulant Test

	<u>Pass</u>	<u>Fail</u>
C. Alarm response		
Challenge Time <u>1</u> sec	N/A	
Time to Alarm <u>3</u> sec	N/A	
Horn Sounds	<u>✓</u>	
Display correctly identifies Blister (Note 1)	<u>✓</u>	
Record response(s) <u>NRV LOW</u> <u>BLS MED</u>		
Cleardown less than 5 minutes after alarm	<u>✓</u>	
Record cleardown time <u>41"</u>		

Note 1 -- Detector must alarm either BLS or BLS/NRV

## 3. "G" Simulant Test

	<u>Pass</u>	<u>Fail</u>
D. Alarm response		
Challenge Time <u>1</u> sec	N/A	
Time to Alarm <u>3</u> sec	N/A	
Horn Sounds	<u>✓</u>	
Display correctly identifies Nerve (Note 2)	<u>✓</u>	
Record response(s) <u>NRV MED</u> <u>BLS LOW</u>		
Cleardown less than 5 minutes after alarm	<u>✓</u>	
Record cleardown time <u>50"</u>		

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by: [Signature] Date: 3/30/98

## H/G Simulant Test Data Sheet

Detector S/N 980206-4 Date: 3-30-98

Software Ver. 5.02A-1 Time: ~~3~~ 15:30

Location: CAM CLEAN ROOM

1. Connect communications cable and begin "Logall"

A. Record datafile name 4F018.DAT  
(Attach copy of data with test records)

**B. Use menu to turn on display (optional)**

- ## 2. "H" Simulant Test

C. Challenge detector for 10 seconds using CAM “H” Simulant generator (7 bars)

#### D. Alarm response

Pass	Fail

Challenge Time 4 sec

N/A

Time to Alarm 4 sec

N/A

## Horn Sounds

✓

Display correctly identifies Blister (Note 1)

✓

Record response(s) BLS MED

**Cleardown less than 5 minutes after alarm**

✓

Record cleardown time 11 SEC

**Note 1 -- Detector must alarm either BLS or BLS/NRV**

- ### 3. "G" Simulant Test

E. Challenge detector for 10 seconds using CAM “H” Simulant generator (7 bars)

### F. Alarm response

Pass	Fail
<p>1. The student can identify the main idea of a passage.</p> <p>2. The student can identify the supporting details of a passage.</p> <p>3. The student can identify the author's purpose in writing a passage.</p> <p>4. The student can identify the author's tone in a passage.</p> <p>5. The student can identify the author's point of view in a passage.</p> <p>6. The student can identify the author's bias in a passage.</p> <p>7. The student can identify the author's audience in a passage.</p> <p>8. The student can identify the author's style in a passage.</p> <p>9. The student can identify the author's structure in a passage.</p> <p>10. The student can identify the author's language in a passage.</p>	<p>1. The student cannot identify the main idea of a passage.</p> <p>2. The student cannot identify the supporting details of a passage.</p> <p>3. The student cannot identify the author's purpose in writing a passage.</p> <p>4. The student cannot identify the author's tone in a passage.</p> <p>5. The student cannot identify the author's point of view in a passage.</p> <p>6. The student cannot identify the author's bias in a passage.</p> <p>7. The student cannot identify the author's audience in a passage.</p> <p>8. The student cannot identify the author's style in a passage.</p> <p>9. The student cannot identify the author's structure in a passage.</p> <p>10. The student cannot identify the author's language in a passage.</p>

Challenge Time 5 sec

N/A

Time to Alarm 5 sec

N/A

## Horn Sounds

✓

Display correctly identifies Nerve (Note 2)

✓

Record response(s) NRV LOW

**Cleardown less than 5 minutes after alarm**

✓

Record cleardown time 0:41

**Note 2 -- Detector must alarm either NRV or NRV/BLS**

Tested by: Allen Weaver

Date \_\_\_\_\_

3-30-98

### Startup Test Checklist and Test Data Sheet

Detector S/N 980206-4 Date: 3/31/98

Software Ver. 5.02A-1 Time: 8:38

Location: EVC-001 -40°C

#### 1. Initial Power On

- A. Uncap the air inlet and air exhaust. Place charcoal filter over the inlet.
- B. Connect communication cable and begin "Logall" file. 46021.DAT
- C. Turn horn volume to full (clockwise)
- D. Connect power and begin stopwatch.
- E. Verify startup sequence.

	Pass	Fail
Display shows M43-APD	<u>✓</u>	<u>      </u>
Display shows the Software Version	<u>✓</u>	<u>      </u>
Display shows LED TEST followed by test patterns	<u>✓</u>	<u>      </u>
Display shows HORNTTEST and horn beeps twice	<u>✓</u>	<u>      </u>
Display shows SELFTEST	<u>✓</u>	<u>      </u>
Display shows STANDBY and backflush begins	<u>✓</u>	<u>      </u>
Display shows READY within 30 minutes after startup	<u>✓</u>	<u>      </u>
Record Time <u>13:50</u>		
Display goes blank approx. 15 seconds after READY	<u>✓</u>	<u>      </u>

Tested by: *Ben Hqn*

Date: 3/31/98

# Confidence Test Data Sheet

Detector S/N 980206 -4 Date: 3/31/98  
 Software Ver. 502A-1 Time: 8:58  
 Location: EVC-001 -40°C

## 1. Connect communications cable and begin "Logall"

- A. Record datafile name 46021.DAT  
 (Attach copy of data with test records)
- B. Use menu to turn on display (optional)

## 2. "H" Simulant Test

	<u>Pass</u>	<u>Fail</u>
C. Alarm response		
Challenge Time <u>2</u> sec	N/A	
Time to Alarm <u>6</u> sec	N/A	
Horn Sounds	<u>✓</u>	<u>      </u>
Display correctly identifies Blister (Note 1)	<u>✓</u>	<u>      </u>
Record response(s) <u>BLS MED</u>		
Cleardown less than 5 minutes after alarm	<u>✓</u>	<u>      </u>
Record cleardown time <u>2:54</u>		

Note 1 -- Detector must alarm either BLS or BLS/NRV

## 3. "G" Simulant Test

	<u>Pass</u>	<u>Fail</u>
D. Alarm response		
Challenge Time <u>1</u> sec	N/A	
Time to Alarm <u>6</u> sec	N/A	
Horn Sounds	<u>✓</u>	<u>      </u>
Display correctly identifies Nerve (Note 2)	<u>✓</u>	<u>      </u>
Record response(s) <u>NRV MED</u>		
Cleardown less than 5 minutes after alarm	<u>✓</u>	<u>      </u>
Record cleardown time <u>0:47</u>		

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by: Amy Lye Date: 3/31/98

# Confidence Test Data Sheet

Detector S/N 980206-04 Date: 3-31-98  
 Software Ver. 5.02A-1 Time: 16:30  
 Location: EVL-001

## 1. Connect communications cable and begin "Logall"

- A. Record datafile name 4H024.DAT  
 (Attach copy of data with test records)
- B. Use menu to turn on display (optional)

## 2. "H" Simulant Test

	<u>Pass</u>	<u>Fail</u>
C. Alarm response		
Challenge Time <u>1</u> sec	N/A	
Time to Alarm <u>5</u> sec	N/A	
Horn Sounds	<u>✓</u>	<u>    </u>
Display correctly identifies Blister (Note 1)	<u>✓</u>	<u>    </u>
Record response(s) <u>BLS MED</u>		
Cleardown less than 5 minutes after alarm	<u>✓</u>	<u>    </u>
Record cleardown time <u>0:35</u>		

Note 1 -- Detector must alarm either BLS or BLS/NRV

## 3. "G" Simulant Test

	<u>Pass</u>	<u>Fail</u>
D. Alarm response		
Challenge Time <u>1</u> sec	N/A	
Time to Alarm <u>4</u> sec	N/A	
Horn Sounds	<u>✓</u>	<u>    </u>
Display correctly identifies Nerve (Note 2)	<u>✓</u>	<u>    </u>
Record response(s) <u>NRV MED</u>		
Cleardown less than 5 minutes after alarm	<u>✓</u>	<u>    </u>
Record cleardown time <u>0:32</u>		

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by: [Signature] Date: 3-31-98

### Confidence Test Data Sheet

Detector S/N 980206-4      Date: 4-1-98  
 Software Ver. 5.02A-1      Time: 8:35  
 Location: EVC-001

1. Connect communications cable and begin "Logall"

- A. Record datafile name 4K027.DAT  
 (Attach copy of data with test records)
- B. Use menu to turn on display (optional)

2. "H" Simulant Test

	<u>Pass</u>	<u>Fail</u>
C. Alarm response		
Challenge Time <u>1</u> sec	N/A	
Time to Alarm <u>4</u> sec	N/A	
Horn Sounds	<u>✓</u>	
Display correctly identifies Blister (Note 1)	<u>✓</u>	
Record response(s) <u>NRV LOW</u> <u>BLS MED</u>		
Cleardown less than 5 minutes after alarm	<u>✓</u>	
Record cleardown time <u>0:36</u>		

Note 1 -- Detector must alarm either BLS or BLS/NRV

3. "G" Simulant Test

	Pass	Fail
D. Alarm response		
Challenge Time <u>1</u> sec	N/A	
Time to Alarm <u>3</u> sec	N/A	
Horn Sounds	<u>✓</u>	
Display correctly identifies Nerve (Note 2)	<u>✓</u>	
Record response(s) <u>NRV LOW</u>		
Cleardown less than 5 minutes after alarm	<u>✓</u>	
Record cleardown time <u>0:23</u>		

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by: M Weaver      Date: 4-1-98

# Confidence Test Data Sheet

Detector S/N 980206-4 Date: 4-1-98

Software Ver. 5.02A-1 Time: 15:00

Location: CAM CLEAN ROOM *FOLLOWING LOW-TEMP*

1. Connect communications cable and begin "Logall"

*TESTING.*

A. Record datafile name 4M029.DAT  
(Attach copy of data with test records)

*SIFS 15:10*

B. Use menu to turn on display (optional)

*R-AIR*

*H*

*G*

2. "H" Simulant Test

C. Alarm response

Pass

Fail

Challenge Time 1 sec

N/A

Time to Alarm 7 sec

N/A

Horn Sounds

✓

Display correctly identifies Blister (Note 1)

✓

Record response(s) BLS LOW

Cleardown less than 5 minutes after alarm

✓

Record cleardown time 0:40

Note 1 - Detector must alarm either BLS or BLS/NRV

3. "G" Simulant Test

D. Alarm response

Pass

Fail

Challenge Time 1 sec

N/A

Time to Alarm 3 sec

N/A

Horn Sounds

✓

Display correctly identifies Nerve (Note 2)

✓

Record response(s) NRV MED

Cleardown less than 5 minutes after alarm

✓

Record cleardown time 0:20 *0:25*  
*AW*

Note 2 - Detector must alarm either NRV or NRV/BLS

Tested by: [Signature]

Date 4-1-98

### Startup Test Checklist and Test Data Sheet

Detector S/N 980206-4 Date: 5-22-98  
Software Ver. 5.02B-1 Time: 16:17  
Location: CAM CLEAN

#### 1. Initial Power On

- A. Uncap the air inlet and air exhaust. Place charcoal filter over the inlet.
- B. Connect communication cable and begin "Logall" file.  
Record datafile name 4\_0522A.DAT  
(Attach copy of data with test records)
- C. Turn horn volume to full (clockwise)
- D. Connect power and begin stopwatch.
- E. Verify startup sequence.

	Pass	Fail
Display shows M43-APD	<u>✓</u>	<u>      </u>
Display shows the Software Version	<u>✓</u>	<u>      </u>
Display shows LED TEST followed by test patterns	<u>✓</u>	<u>      </u>
Display shows HORNTTEST and horn beeps twice	<u>✓</u>	<u>      </u>
Display shows SELFTEST	<u>✓</u>	<u>      </u>
Display shows STANDBY and backflush begins	<u>✓</u>	<u>      </u>
Display shows READY within 30 minutes after startup	<u>✓</u>	<u>      </u>
Record Time <u>2'38"</u>		
Display goes blank approx. 15 seconds after READY	<u>✓</u>	<u>      </u>

Tested by: [Signature]

Date 5-22-98



# Confidence Test Data Sheet

Detector S/N 980206-4

Date: 5-22-98

Software Ver. 5.02A-1

Time: 16:22

Location: CAM CLEAN

## 1. Connect communications cable and begin "Logall"

A. Record datafile name 4\_0522A.DAT  
(Attach copy of data with test records)

B. Use menu to turn on display (optional)

## 2. "H" Simulant Test

Startup testing only: elapsed time since power on (min)	5		
Challenge time (sec)	1		
Time to alarm (sec)	4		
Horn sounds	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Display correctly identifies Blister (Note 1)	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Record response(s)	NRV L M H BLS L M H	NRV L M H BLS L M H	NRV L M H BLS L M H
Cleardown less than 5 minutes after alarm (mm:ss)	<u>Pass</u> / Fail 0:49	Pass / Fail	Pass / Fail
Record cleardown time			

Note 1 -- Detector must alarm either BLS or BLS/NRV

## 3. "G" Simulant Test

Startup testing only: elapsed time since power on (min)	7		
Challenge time (sec)	1		
Time to alarm (sec)	8		
Horn sounds	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Display correctly identifies Blister (Note 1)	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Record response(s)	NRV L M H BLS L M H	NRV L M H BLS L M H	NRV L M H BLS L M H
Cleardown less than 5 minutes after alarm (mm:ss)	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Record cleardown time	0:35		

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by: [Signature]

Date

5-22-98

# H/G Simulant Test Data Sheet

Detector S/N 980206-4 Date: 5-22-98  
 Software Ver. 5.02B-1 Time: 16:28  
 Location: CAM CLEAN

## 1. Connect communications cable and begin "Logall"

A. Record datafile name \_\_\_\_\_  
 (Attach copy of data with test records)

B. Use menu to turn on display (optional)

## 2. "H" Simulant Test

C. Challenge detector for 10 seconds using CAM "H" Simulant generator (7 bars)

	<u>Pass</u>	<u>Fail</u>
D. Alarm response	N/A	
Challenge Time <u>3</u> sec	N/A	
Time to Alarm <u>3</u> sec	N/A	
Horn Sounds	<u>✓</u>	
Display correctly identifies Blister (Note 1)	<u>✓</u>	
Record response(s) <u>BLS MED</u>		
Cleardown less than 5 minutes after alarm	<u>✓</u>	
Record cleardown time <u>0:23</u>		

Note 1 -- Detector must alarm either BLS or BLS/NRV

## 3. "G" Simulant Test

E. Challenge detector for 10 seconds using CAM "H" Simulant generator (7 bars)

	<u>Pass</u>	<u>Fail</u>
F. Alarm response	N/A	
Challenge Time <u>3</u> sec	N/A	
Time to Alarm <u>3</u> sec	N/A	
Horn Sounds	<u>✓</u>	
Display correctly identifies Nerve (Note 2)	<u>✓</u>	
Record response(s) <u>BLS LOW</u>		
<u>NRV MED</u>		
Cleardown less than 5 minutes after alarm	<u>✓</u>	
Record cleardown time <u>0:37</u>		

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by: Allen E. Weaver Date: 5-22-98

# Startup Test Checklist and Test Data Sheet

Detector S/N 980206-4

Date: 5-26-98

Software Ver. 5.02B-1

Time: 8:57

Location: EVC Pool 0277

## 1. Initial Power On

- A. Uncap the air inlet and air exhaust. Place charcoal filter over the inlet.
- B. Connect communication cable and begin "Logall" file.  
Record datafile name 4\_0526A.DAT  
(Attach copy of data with test records)
- C. Turn horn volume to full (clockwise)
- D. Connect power and begin stopwatch.
- E. Verify startup sequence.

	Pass	Fail
Display shows M43-APD	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows the Software Version	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows LED TEST followed by test patterns	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows HORNTTEST and horn beeps twice	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows SELFTEST	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows STANDBY and backflush begins	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows READY within 30 minutes after startup	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Record Time <u>2'37</u>		
Display goes blank approx. 15 seconds after READY	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Tested by:

[Signature]

Date

5-26-98

# Confidence Test Data Sheet

Detector S/N 980206-4

Date: 5-26-98

Software Ver. 5.02B-1

Time: 8:57

Location: EVC Pool 0277

## 1. Connect communications cable and begin "Logall"

A. Record datafile name 4-0526A.DAT  
(Attach copy of data with test records)

B. Use menu to turn on display (optional)

## 2. "H" Simulant Test

Startup testing only: elapsed time since power on (min)	5'	12'	20'
Challenge time (sec)	4"	4"	4"
Time to alarm (sec)	—	—	4"
Horn sounds	Pass / Fail	Pass / Fail	<u>Pass</u> / Fail
Display correctly identifies Blister (Note 1)	Pass / Fail	Pass / Fail	<u>Pass</u> / Fail
Record response(s)	NRV L M H BLS L M H	NRV L M H BLS L M H	NRV L M H <u>BLS</u> L M H
Cleardown less than 5 minutes after alarm (mm:ss)	Pass / Fail	Pass / Fail	<u>Pass</u> / Fail
Record cleardown time			20"

Note 1 -- Detector must alarm either BLS or BLS/NRV

## 3. "G" Simulant Test

Startup testing only: elapsed time since power on (min)	9'		
Challenge time (sec)	1"		
Time to alarm (sec)	6"		
Horn sounds	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Display correctly identifies Nerve (Note 1)	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Record response(s)	<u>NRV</u> L M H BLS L M H	NRV L M H BLS L M H	NRV L M H BLS L M H
Cleardown less than 5 minutes after alarm (mm:ss)	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Record cleardown time	0:19"		

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by: [Signature]

Date

5-26-98

# Confidence Test Data Sheet

Detector S/N 980206-4

Date: 5-26-98

Software Ver. 5.028-1

Time: 13:16

Location: EVC Pool 0277

## 1. Connect communications cable and begin "Logall"

A. Record datafile name 4-0526D.DAT  
(Attach copy of data with test records)

B. Use menu to turn on display (optional)

## 2. "H" Simulant Test

Startup testing only: elapsed time since power on (min)	N/A		
Challenge time (sec)	1		
Time to alarm (sec)	3		
Horn sounds	Pass / Fail	Pass / Fail	Pass / Fail
Display correctly identifies Blister (Note 1)	Pass / Fail	Pass / Fail	Pass / Fail
Record response(s)	NRV L M H BLS L M H	NRV L M H BLS L M H	NRV L M H BLS L M H
Cleardown less than 5 minutes after alarm (mm:ss)	Pass / Fail	Pass / Fail	Pass / Fail
Record cleardown time	0:21		

Note 1 -- Detector must alarm either BLS or BLS/NRV

## 3. "G" Simulant Test

Startup testing only: elapsed time since power on (min)	N/A		
Challenge time (sec)	1		
Time to alarm (sec)	5		
Horn sounds	Pass / Fail	Pass / Fail	Pass / Fail
Display correctly identifies Nerve (Note 1)	Pass / Fail	Pass / Fail	Pass / Fail
Record response(s)	NRV L M H BLS L M H	NRV L M H BLS L M H	NRV L M H BLS L M H
Cleardown less than 5 minutes after alarm (mm:ss)	Pass / Fail	Pass / Fail	Pass / Fail
Record cleardown time	0:24		

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by: He Wany

Date

5-26-98

### Startup Test Checklist and Test Data Sheet

Detector S/N 980206-5 Date: 3-24-98

Software Ver. 502-1 Time: 18:20

Location: CAM CLEAN ROOM

#### 1. Initial Power On

- A. Uncap the air inlet and air exhaust. Place charcoal filter over the inlet.
- B. Connect communication cable and begin "Logall" file. 5A001.DAT
- C. Turn horn volume to full (clockwise)
- D. Connect power and begin stopwatch.
- E. Verify startup sequence.

	Pass	Fail
Display shows M43-APD	<u>✓</u>	<u>      </u>
Display shows the Software Version	<u>✓</u>	<u>      </u>
Display shows LED TEST followed by test patterns	<u>✓</u>	<u>      </u>
Display shows HORNTTEST and horn beeps twice	<u>✓</u>	<u>      </u>
Display shows SELFTEST	<u>✓</u>	<u>      </u>
Display shows STANDBY and backflush begins	<u>✓</u>	<u>      </u>
Display shows READY within 30 minutes after startup	<u>✓</u>	<u>      </u>
Record Time <u>2:39</u>		
Display goes blank approx. 15 seconds after READY	<u>✓</u>	<u>      </u>

Tested by: 

Date 3-24-98

# Confidence Test Data Sheet

Detector S/N 980206-5 Date: 3-24-98  
 Software Ver. 502-1 Time: 18:25  
 Location: CAM CLEANROOM

## 1. Connect communications cable and begin "Logall"

A. Record datafile name SA001.DAT  
 (Attach copy of data with test records)

B. Use menu to turn on display (optional)

SA002. SIG F-AIR  
 H 1 SEC  
 G 1 SEC

## 2. "H" Simulant Test

### C. Alarm response

Challenge Time 1 sec

Time to Alarm 4 sec

Horn Sounds

Display correctly identifies Blister (Note 1)

Record response(s) BLS MED  
3-24-98  
NERV LOW

Cleardown less than 5 minutes after alarm

Record cleardown time 42 SEC

Pass

Fail

N/A

N/A

✓

✓

✓

Note 1 -- Detector must alarm either BLS or BLS/NRV

## 3. "G" Simulant Test

### D. Alarm response

Challenge Time 1 sec

Time to Alarm 17 sec

Horn Sounds

Display correctly identifies Nerve (Note 2)

Record response(s) NERV LOW

Cleardown less than 5 minutes after alarm

Record cleardown time 17

Pass

Fail

N/A

N/A

✓

✓

✓

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by: [Signature]

Date

3-24-98

# H/G Simulant Test Data Sheet

Detector S/N 980206-5 Date: 3-24-98  
 Software Ver. 502-1 Time: 18:28  
 Location: CAM CLEAN ROOM

## 1. Connect communications cable and begin "Logall"

A. Record datafile name 5A001.DAT  
 (Attach copy of data with test records)

B. Use menu to turn on display (optional)

5A003,51 ← R-AIR  
~~FAIR~~  
 (MONITOR H 10 SEC  
 MODE) ← 10 SEC

## 2. "H" Simulant Test

C. Challenge detector for 10 seconds using CAM "H" Simulant generator (7 bars)

D. Alarm response

Challenge Time 7 sec

Time to Alarm 7 sec

Horn Sounds

Display correctly identifies Blister (Note 1)

Record response(s) BLST MED

Cleardown less than 5 minutes after alarm

Record cleardown time 29

Note 1 -- Detector must alarm either BLS or BLS/NRV

Pass	Fail
N/A	
N/A	
✓	
✓	
✓	

## 3. "G" Simulant Test

E. Challenge detector for 10 seconds using CAM "H" Simulant generator (7 bars)

F. Alarm response

Challenge Time 7 sec

Time to Alarm 7 sec

Horn Sounds

Display correctly identifies Nerve (Note 2)

Record response(s) NERVMED

Cleardown less than 5 minutes after alarm

Record cleardown time 29

Note 2 -- Detector must alarm either NRV or NRV/BLS

Pass	Fail
N/A	
N/A	
✓	
✓	
✓	

Tested by: [Signature]

Date 3-24-98



## Startup Test Checklist and Test Data Sheet

Detector S/N 980206-5      Date: 3-25-98  
 Software Ver. 5.02A-1      Time: 12:09:37  
 Location: EVC-001      STARTUP @ -40°C

### 1. Initial Power On

- A. Uncap the air inlet and air exhaust. Place charcoal filter over the inlet.
- B. Connect communication cable and begin "Logall" file. 5B004.DAT
- C. Turn horn volume to full (clockwise)
- D. Connect power and begin stopwatch.
- E. Verify startup sequence.

	Pass	Fail
Display shows M43-APD	<u>✓</u>	<u>      </u>
Display shows the Software Version	<u>✓</u>	<u>      </u>
Display shows LED TEST followed by test patterns	<u>✓</u>	<u>      </u>
Display shows HORNTTEST and horn beeps twice	<u>✓</u>	<u>      </u>
Display shows SELFTEST	<u>✓</u>	<u>      </u>
Display shows STANDBY and backflush begins	<u>✓</u>	<u>      </u>
Display shows READY within 30 minutes after startup	<u>✓</u>	<u>      </u>
Record Time <u>2:46</u>		
Display goes blank approx. 15 seconds after READY	<u>✓</u>	<u>      </u>

Tested by:       Date: 3-25-98



# Confidence Test Data Sheet

Detector S/N 980206-5

Date: 3-25-98

Software Ver. 5.02A-1

Time: 17:37

Location: EVC-001

RUNNING 4 HRS @ -30°C

## 1. Connect communications cable and begin "Logall"

A. Record datafile name SC007.DAT  
(Attach copy of data with test records)

SIGS

SIGS  
SC008.SIG  
F-AIR  
H  
G

B. Use menu to turn on display (optional)

## 2. "H" Simulant Test

### C. Alarm response

Challenge Time 1 sec

Time to Alarm 4 sec

Horn Sounds

Display correctly identifies Blister (Note 1)

Record response(s) BLS MED

Cleardown less than 5 minutes after alarm

Record cleardown time 0:30

Pass

Fail

N/A

N/A

✓

✓

✓

Note 1 -- Detector must alarm either BLS or BLS/NRV

## 3. "G" Simulant Test

### D. Alarm response

Challenge Time 1 sec

Time to Alarm 5 sec

Horn Sounds

Display correctly identifies Nerve (Note 2)

Record response(s) NRV LOW

Cleardown less than 5 minutes after alarm

Record cleardown time 1:05

Pass

Fail

N/A

N/A

✓

✓

✓

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by: [Signature]

Date

3-25-98

### Confidence Test Data Sheet

Detector S/N 980206-5      Date: 3-26-98  
 Software Ver. 5.02A-1      Time: 17:32  
 Location: EVC-001

1. Connect communications cable and begin "Logall"

- A. Record datafile name 5D010.DAT  
 (Attach copy of data with test records)
- B. Use menu to turn on display (optional)

2. "H" Simulant Test


	<u>Pass</u>	<u>Fail</u>
C. Alarm response	N/A	
Challenge Time <u>2</u> sec	N/A	
Time to Alarm <u>7</u> sec	<u>✓</u>	
Horn Sounds	<u>✓</u>	
Display correctly identifies Blister (Note 1)	<u>✓</u>	
Record response(s) <u>BLS MED</u>		
Cleardown less than 5 minutes after alarm	<u>✓</u>	
Record cleardown time <u>1:00</u>		

Note 1 -- Detector must alarm either BLS or BLS/NRV

3. "G" Simulant Test

	Pass	Fail
D. Alarm response	N/A	
Challenge Time <u>1</u> sec	N/A	
Time to Alarm <u>7</u> sec	<u>✓</u>	
Horn Sounds	<u>✓</u>	
Display correctly identifies Nerve (Note 2)	<u>✓</u>	
Record response(s) <u>NRV Low</u>		
<u>BLS Low</u>		
Cleardown less than 5 minutes after alarm	<u>✓</u>	
Record cleardown time <u>1:00</u>		

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by:       Date: 3-6-98

## Startup Test Checklist and Test Data Sheet

Detector S/N 980206-5 Date: 3-27-98

Software Ver. 5.02A-1 Time: 9:30

Location: CAM CLEAN ROOM

### 1. Initial Power On

- A. Uncap the air inlet and air exhaust. Place charcoal filter over the inlet.
- B. Connect communication cable and begin "Logall" file. 5E015.DAT
- C. Turn horn volume to full (clockwise)
- D. Connect power and begin stopwatch.
- E. Verify startup sequence.

	Pass	Fail
Display shows M43-APD	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows the Software Version	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows LED TEST followed by test patterns	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows HORNTTEST and horn beeps twice	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows SELFTEST	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows STANDBY and backflush begins	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows READY within 30 minutes after startup	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Record Time <u>2:29</u>		
Display goes blank approx. 15 seconds after READY	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Tested by: Allen E. Leary

Date: 3-27-98

# Confidence Test Data Sheet

Detector S/N 980206-5 Date: 3-27-98  
 Software Ver. 5.02A-1 Time: 9:40  
 Location: CAM CLEAN ROOM

## 1. Connect communications cable and begin "Logall"

- A. Record datafile name 5E015.DAT  
 (Attach copy of data with test records)  
 B. Use menu to turn on display (optional)

## 2. "H" Simulant Test

	Pass	Fail
C. Alarm response		
Challenge Time <u>1</u> sec	N/A	
Time to Alarm <u>3</u> sec	N/A	
Horn Sounds	<u>✓</u>	
Display correctly identifies Blister (Note 1)	<u>✓</u>	
Record response(s) <u>BLS LOW</u>		
Cleardown less than 5 minutes after alarm	<u>✓</u>	
Record cleardown time <u>0:46</u>		

Note 1 -- Detector must alarm either BLS or BLS/NRV

## 3. "G" Simulant Test

	Pass	Fail
D. Alarm response		
Challenge Time <u>1</u> sec	N/A	
Time to Alarm <u>8</u> sec	N/A	
Horn Sounds	<u>✓</u>	
Display correctly identifies Nerve (Note 2)	<u>✓</u>	
Record response(s) <u>NRV MED</u>		
Cleardown less than 5 minutes after alarm	<u>✓</u>	
Record cleardown time <u>0:33</u>		

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by: [Signature] Date: 3-27-98

# Startup Test Checklist and Test Data Sheet

Detector S/N 980206-5 Date: 3/31/98  
 Software Ver. S-02A-1 Time: 9:30  
 Location: Thermoseal - 257

## 1. Initial Power On

- A. Uncap the air inlet and air exhaust. Place charcoal filter over the inlet.
- B. Connect communication cable and begin "Logall" file. SG017.0A7
- C. Turn horn volume to full (clockwise)
- D. Connect power and begin stopwatch.
- E. Verify startup sequence.

	Pass	Fail
Display shows M43-APD	<u>✓</u>	<u>      </u>
Display shows the Software Version	<u>✓</u>	<u>      </u>
Display shows LED TEST followed by test patterns	<u>✓</u>	<u>      </u>
Display shows HORNTTEST and horn beeps twice	<u>✓</u>	<u>      </u>
Display shows SELFTEST	<u>✓</u>	<u>      </u>
Display shows STANDBY and backflush begins	<u>✓</u>	<u>      </u>
Display shows READY within 30 minutes after startup	<u>      </u>	<u>X</u>
Record Time <u>                    </u>		
Display goes blank approx. 15 seconds after READY	<u>✓</u>	<u>      </u>

Tested by: 

Date

3-31-98

### Startup Test Checklist and Test Data Sheet

Detector S/N 980206-5

Date: 5-22-98

Software Ver. 5.02B-1

Time: 17:30

Location: CAM CLEAN

#### 1. Initial Power On

A. Uncap the air inlet and air exhaust. Place charcoal filter over the inlet.

B. Connect communication cable and begin "Logall" file.

Record datafile name 5-0522A.DAT  
(Attach copy of data with test records)

C. Turn horn volume to full (clockwise)

D. Connect power and begin stopwatch.

E. Verify startup sequence.

	Pass	Fail
Display shows M43-APD	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows the Software Version	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows LED TEST followed by test patterns	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows HORNTTEST and horn beeps twice	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows SELFTEST	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows STANDBY and backflush begins	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows READY within 30 minutes after startup	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Record Time <u>3:22</u>		
Display goes blank approx. 15 seconds after READY	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Tested by:

[Signature]

Date

5-22-98



# Confidence Test Data Sheet

Detector S/N 980206-5

Date: 5-22-98

Software Ver. 5.02B-1

Time: 17:35

Location: CAM CLEAN

## 1. Connect communications cable and begin "Logall"

A. Record datafile name 5-0522A.DAT  
(Attach copy of data with test records)

B. Use menu to turn on display (optional)

## 2. "H" Simulant Test

Startup testing only: elapsed time since power on (min)	<u>5</u>		
Challenge time (sec)	<u>1</u>		
Time to alarm (sec)	<u>3</u>		
Horn sounds	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Display correctly identifies Blister (Note 1)	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Record response(s)	NRV L M H <u>BLS</u> L <u>M</u> H	NRV L M H BLS L M H	NRV L M H BLS L M H
Cleardown less than 5 minutes after alarm (mm:ss)	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Record cleardown time	<u>0:35</u>		

Note 1 -- Detector must alarm either BLS or BLS/NRV

## 3. "G" Simulant Test

Startup testing only: elapsed time since power on (min)	<u>7</u>		
Challenge time (sec)	<u>1</u>		
Time to alarm (sec)	<u>5</u>		
Horn sounds	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Display correctly identifies Nerve (Note 1)	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Record response(s)	<u>NRV</u> L M H BLS L M H	NRV L M H BLS L M H	NRV L M H BLS L M H
Cleardown less than 5 minutes after alarm (mm:ss)	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Record cleardown time	<u>2:41 *</u>		

Note 2 -- Detector must alarm either NRV or NRV/BLS

\* DETECTOR RE-ARMED AFTER APPROX 30 SECONDS

Tested by: [Signature]

Date

5-22-98

# H/G Simulant Test Data Sheet

Detector S/N 980206-5 Date: 5-22-98  
 Software Ver. 5.02B-1 Time: 5:42 PM  
 Location: CAM CLEAN

## 1. Connect communications cable and begin "Logall"

- A. Record datafile name 5-0522A.DAT  
 (Attach copy of data with test records)  
 B. Use menu to turn on display (optional)

## 2. "H" Simulant Test

C. Challenge detector for 10 seconds using CAM "H" Simulant generator (7 bars)

	<u>Pass</u>	<u>Fail</u>
D. Alarm response	N/A	
Challenge Time <u>4</u> sec	N/A	
Time to Alarm <u>4</u> sec	<u>✓</u>	
Horn Sounds	<u>✓</u>	
Display correctly identifies Blister (Note 1)		
Record response(s) <u>BLS MED</u>		
Cleardown less than 5 minutes after alarm	<u>✓</u>	
Record cleardown time <u>0:23</u>		

Note 1 -- Detector must alarm either BLS or BLS/NRV

## 3. "G" Simulant Test

E. Challenge detector for 10 seconds using CAM "H" Simulant generator (7 bars)

	<u>Pass</u>	<u>Fail</u>
F. Alarm response	N/A	
Challenge Time <u>6</u> sec	N/A	
Time to Alarm <u>6</u> sec	<u>✓</u>	
Horn Sounds	<u>✓</u>	
Display correctly identifies Nerve (Note 2)		
Record response(s) <u>NRV MED</u>		
<u>BLS LOW</u>		
Cleardown less than 5 minutes after alarm	<u>✓</u>	
Record cleardown time <u>0:40</u>		

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by: [Signature] Date 5-22-98

# Startup Test Checklist and Test Data Sheet

Detector S/N 980206-5

Date: 5-26-98

Software Ver. 5.02B-1

Time: 8:40

Location: EVC Pool 0277

## 1. Initial Power On

- A. Uncap the air inlet and air exhaust. Place charcoal filter over the inlet.
- B. Connect communication cable and begin "Logall" file.  
Record datafile name 5\_0526A.DAT  
(Attach copy of data with test records)
- C. Turn horn volume to full (clockwise)
- D. Connect power and begin stopwatch.
- E. Verify startup sequence.

	Pass	Fail
Display shows M43-APD	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows the Software Version	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows LED TEST followed by test patterns	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows HORNTTEST and horn beeps twice	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows SELFTEST	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows STANDBY and backflush begins	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows READY within 30 minutes after startup	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Record Time <u>4:50</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display goes blank approx. 15 seconds after READY	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Tested by: [Signature]

Date

5-26-98

# Confidence Test Data Sheet

Detector S/N 980206-5

Date: 5-26-98

Software Ver. 5.02B-1

Time: 8:47

Location: EVC POOL 0277

## 1. Connect communications cable and begin "Logall"

- A. Record datafile name 5-0526A.DAT  
(Attach copy of data with test records)
- B. Use menu to turn on display (optional)

## 2. "H" Simulant Test

Startup testing only: elapsed time since power on (min)	7'	12'	
Challenge time (sec)	4"	1"	
Time to alarm (sec)	—	3"	
Horn sounds	Pass / Fail	<u>Pass</u> / Fail	Pass / Fail
Display correctly identifies Blister (Note 1)	Pass / Fail	<u>Pass</u> / Fail	Pass / Fail
Record response(s)	NRV L M H BLS L M H	NRV L M H <u>BLS</u> L M H	NRV L M H BLS L M H
Cleardown less than 5 minutes after alarm (mm:ss)	Pass / Fail	<u>Pass</u> / Fail	Pass / Fail
Record cleardown time		20"	

Note 1 -- Detector must alarm either BLS or BLS/NRV

## 3. "G" Simulant Test

Startup testing only: elapsed time since power on (min)	10'		
Challenge time (sec)	1		
Time to alarm (sec)	7		
Horn sounds	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Display correctly identifies Nerve (Note 1)	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Record response(s)	<u>NRV</u> L M H BLS L M H	NRV L M H BLS L M H	NRV L M H BLS L M H
Cleardown less than 5 minutes after alarm (mm:ss)	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Record cleardown time	41"		

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by: [Signature]

Date: 5-26-98

# Confidence Test Data Sheet

Detector S/N 980206-5 Date: 5-26-98  
 Software Ver. 5.02B-1 Time: 13:28  
 Location: EVC Pool 0277

## 1. Connect communications cable and begin "Logall"

- A. Record datafile name 5-0526D.DAT  
 (Attach copy of data with test records)
- B. Use menu to turn on display (optional)

## 2. "H" Simulant Test

Startup testing only: elapsed time since power on (min)	<u>N/A</u>		
Challenge time (sec)	<u>1</u>		
Time to alarm (sec)	<u>4</u>		
Horn sounds	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Display correctly identifies Blister (Note 1)	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Record response(s)	NRV L M H <u>BLS</u> L M H	NRV L M H BLS L M H	NRV L M H BLS L M H
Cleardown less than 5 minutes after alarm (mm:ss)	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Record cleardown time	<u>0:28</u>		

Note 1 -- Detector must alarm either BLS or BLS/NRV

## 3. "G" Simulant Test

Startup testing only: elapsed time since power on (min)	<u>N/A</u>		
Challenge time (sec)	<u>1</u>		
Time to alarm (sec)	<u>7</u>		
Horn sounds	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Display correctly identifies Nerve (Note 1)	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Record response(s)	<u>NRV</u> L M H BLS L M H	NRV L M H BLS L M H	NRV L M H BLS L M H
Cleardown less than 5 minutes after alarm (mm:ss)	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Record cleardown time	<u>1:04</u>		

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by: [Signature]

Date

5-26-98

Blank

**APPENDIX B. GOVERNMENT EVALUATION TEST DATA:  
AGENT VAPOR**

Blank



Date	Agent	Conc (ug/l)	RH	Temp	Det #	On Cond	On Agent	Alarm	Clear	Resp	Cond Time	Alarm Time	Clear Time	Notes
8/3/98	GD	0.091	0%	20	1	14:45:51	14:50:51				00:05:00	#####	00:00:00	
8/3/98	GD	0.091	0%	20	1		14:55:05				14:55:05	#####	00:00:00	
8/3/98	GD	0.091	0%	20	1	14:56:14	14:57:12				00:00:57	#####	00:00:00	
8/3/98	GD	0.091	0%	20	2	15:14:25	15:16:16				00:01:51	#####	00:00:00	
8/3/98	GD	0.091	0%	20	2	15:17:23	15:18:52				00:01:29	#####	00:00:00	
8/3/98	GD	0.091	0%	20	2	15:20:00	15:21:38				00:01:38	#####	00:00:00	
8/4/98	GD	0.122	90	20	1	09:33:21	09:34:38			No alarm	00:01:17	#####	00:00:00	
8/4/98	GD	0.122	90	20	2	09:46:06	09:47:06			No alarm	00:01:00	#####	00:00:00	
8/4/98	GD	0.13	90	20	1	10:14:12	10:15:35			No alarm	00:01:23	#####	00:00:00	
8/4/98	GD	0.13	90	20	2	10:27:36	10:28:42			No alarm	00:01:06	#####	00:00:00	
8/4/98	GD	0.122	90	20	1	10:52:26	10:54:35			No alarm	00:02:09	#####	00:00:00	
8/4/98	GD	0.122	90	20	2	11:06:18	11:08:02			No alarm	00:01:45	#####	00:00:00	
8/4/98	GD	1.017	90	20	1	14:37:15	14:38:23	14:39:35	14:41:29	Alarm	00:01:07	00:01:13	00:01:54	
8/4/98	GD	1.017	90	20	2	14:42:20	14:44:05	no alarm			00:01:45	#VALUE!	#VALUE!	
8/4/98	GD	1	90	20	1	15:05:01	15:07:07	15:07:17	15:07:54	Alarm	00:02:06	00:00:10	00:00:37	
8/4/98	GD	1	90	20	2	15:24:39	15:25:54			No Alarm	00:01:15	#####	00:00:00	
8/4/98	GD	1	90	20	1	15:28:36	15:31:00	15:31:21	15:32:07	Alarm	00:02:24	00:00:20	00:00:47	
8/4/98	GD	1	90	20	1	15:32:55	15:33:05	15:33:45			00:00:10	00:00:40	#####	
8/4/98	GD	1	90	20	2	15:34:57	15:38:00			No Alarm	00:03:04	#####	00:00:00	
8/4/98	GD	1	90	20	2	15:42:21	15:44:01			No Alarm	00:01:40	#####	00:00:00	
8/5/98	GA	0.104	2	20	1	09:15:21	09:17:08	09:17:40	09:18:10	Alarm	00:01:47	00:00:32	00:00:30	
8/5/98	GA	0.104	2	20	2	09:32:35	09:33:57	09:34:10	09:34:43	Alarm	00:01:22	00:00:13	00:00:33	
8/5/98	GA	0.115	2	20	1	09:59:40	10:00:23	10:00:42	10:01:10	Alarm	00:00:43	00:00:19	00:00:29	
8/5/98	GA	0.115	2	20	2	10:14:09	10:15:22	10:15:37	10:16:07	Alarm	00:01:13	00:00:15	00:00:30	
8/5/98	GA	0.116	2	20	1	10:29:53	10:31:01	10:31:20	10:31:50	Nerve low	00:01:08	00:00:20	00:00:30	
8/5/98	GA	0.116	2	20	2	10:42:36	10:43:59	10:44:10	10:44:40	Nerve low	00:01:24	00:00:10	00:00:30	
8/5/98	GA	0.14	92	20	1	13:18:21	13:20:03	13:20:26	13:20:45	Nerve low	00:01:41	00:00:23	00:00:18	
8/5/98	GA	0.14	92	20	2	13:43:49	13:45:59	13:46:14	13:46:44	Nerve low	00:02:10	00:00:15	00:00:30	
8/5/98	GA	0.111	92	20	1	14:16:38	14:18:52	14:19:17	14:19:47	Nerve low	00:02:15	00:00:25	00:00:30	
8/5/98	GA	0.111	92	20	2	14:31:45	14:32:51	14:33:04	14:33:33	Nerve low	00:01:06	00:00:13	00:00:29	
8/5/98	GA	0.119	92	20	1	14:50:22	14:51:58	14:52:31	14:53:00	Nerve low	00:01:35	00:00:34	00:00:29	
8/5/98	GA	0.119	92	20	2	15:03:23	15:05:02	15:05:15	15:05:47	Nerve low	00:01:39	00:00:14	00:00:31	
8/6/98	GB	0.099	3	20	1	09:15:55	09:16:53	09:17:13	09:17:32	Nerve low	00:00:58	00:00:20	00:00:19	
8/6/98	GB	0.099	3	20	2	09:30:13	09:31:00	09:31:18	09:31:41	Nerve low	00:00:47	00:00:18	00:00:22	
8/6/98	GB	0.113	3	20	1	09:53:51	09:54:02	09:54:19	09:54:39	Nerve low	00:00:11	00:00:17	00:00:20	
8/6/98	GB	0.113	3	20	2	10:06:10	10:07:00	10:07:20	10:07:44	Nerve low	00:00:50	00:00:20	00:00:24	
8/6/98	GB	0.117	3	20	1	10:25:17	10:25:29	10:25:46	10:26:05	Nerve low	00:00:12	00:00:17	00:00:19	

Date	Agent	Conc (ug/l)	RH	Temp	Det #	On Cond	On Agent	Alarm	Clear	Resp	Cond Time	Alarm Time	Clear Time	Notes
8/6/98	GB	0.117	3	20	2	10:37:47	10:37:59	10:38:17	10:38:36	Nerve low	00:00:11	00:00:18	00:00:19	
8/6/98	GB	0.108	90	20	1	13:24:00	13:24:57	13:25:13	13:25:32	Nerve low	00:00:57	00:00:16	00:00:20	
8/6/98	GB	0.108	90	20	2	13:35:11	13:35:56	13:36:13	13:36:33	Nerve low	00:00:45	00:00:18	00:00:19	
8/6/98	GB	0.109	90	20	1	13:59:09	13:59:58	14:00:18	14:00:38	Nerve low	00:00:49	00:00:20	00:00:20	
8/6/98	GB	0.109	90	20	2	14:11:02	14:11:59	14:12:17	14:12:36	Nerve low	00:00:57	00:00:18	00:00:19	
8/6/98	GB	0.114	90	20	1	14:23:13	14:23:17	14:23:32	14:23:52	Nerve low	00:00:04	00:00:15	00:00:19	
8/6/98	GB	0.114	90	20	2	14:34:02	14:34:21	14:34:38	14:34:57	Nerve low	00:00:19	00:00:17	00:00:19	
8/7/98	HD	1.933	3	20	1	08:50:19	08:50:51	08:50:57	08:51:27	BLS LOW	00:00:32	00:00:06	00:00:30	
8/7/98	HD	1.933	3	20	2	08:58:06	08:59:53	08:59:56	09:00:25	BLS LOW	00:01:47	00:00:03	00:00:29	
8/7/98	HD	2.12	3	20	1	09:18:09	09:19:07	09:19:11	09:19:40	BLS LOW	00:00:58	00:00:04	00:00:29	
8/7/98	HD	2.12	3	20	2	09:36:18	09:37:23	09:37:26	09:37:52	BLS LOW	00:01:05	00:00:03	00:00:26	
8/7/98	HD	2.047	3	20	1	09:53:49	09:54:50	09:54:56	09:55:25	BLS LOW	00:01:01	00:00:06	00:00:29	
8/7/98	HD	2.047	3	20	2	10:05:07	10:05:50	10:05:59	10:06:26	BLS LOW	00:00:43	00:00:09	00:00:27	
8/7/98	HD	2.197	88	20	1	10:49:32	10:50:49	10:50:56	10:51:25	BLS LOW	00:01:16	00:00:07	00:00:29	
8/7/98	HD	2.197	88	20	2	11:06:42	11:07:48	11:07:55	11:08:24	BLS LOW	00:01:05	00:00:07	00:00:30	
8/7/98	HD	2.154	88	20	1	11:29:47	11:30:17	11:30:21	11:30:50	BLS LOW	00:00:31	00:00:03	00:00:29	
8/7/98	HD	2.154	88	20	2	11:43:27	11:44:01	11:44:09	11:44:38	BLS LOW	00:00:34	00:00:08	00:00:29	
8/7/98	HD	2.258	88	20	1	11:59:36	12:00:49	12:00:54	12:01:22	BLS LOW	00:01:13	00:00:04	00:00:29	
8/7/98	HD	2.258	88	20	2	12:11:48	12:12:48	12:12:52	12:13:18	BLS LOW	00:00:59	00:00:04	00:00:26	
8/7/98	HD	36	3	20	1	14:02:05	14:02:47	14:02:52	14:04:02	BLS LOW	00:00:42	00:00:05	00:01:10	
8/7/98	HD	36	3	20	2	14:16:04	14:16:46	14:16:54	14:17:57	BLS LOW	00:00:42	00:00:07	00:01:03	Realmed
8/7/98	HD	34	3	20	1	14:39:56	14:40:30	14:40:36	14:41:43	BLS LOW	00:00:34	00:00:06	00:01:07	
8/7/98	HD	34	3	20	2	14:54:25	14:55:00	14:55:03	14:56:00	BLS LOW	00:00:35	00:00:02	00:00:57	
8/7/98	HD	52.917	3	20	1	15:12:49	15:13:48	15:13:53	15:15:24	BLS LOW	00:00:59	00:00:06	00:01:30	Realmed
8/7/98	HD	52.917	3	20	2	15:22:42	15:23:47	15:23:51	15:24:49	BLS LOW	00:01:06	00:00:03	00:00:59	
8/8/98	VX	?	3	20	1		08:39:54	08:41:21	08:41:32	Nerve low	08:39:54	00:01:27	00:00:11	
8/8/98	VX	?	3	20	2	08:58:21	08:59:23	09:01:12	09:01:38	Nerve low	00:01:02	00:01:48	00:00:26	
8/8/98	VX	?	3	20	1	09:46:53	09:47:46				00:00:53	#####	00:00:00	
8/8/98	VX	0.058	3	20	2	10:14:15	10:15:17	10:15:42	10:16:03	Nerve low	00:01:02	00:00:25	00:00:21	
8/8/98	VX	0.058	3	20	1	10:25:49	10:26:22	10:27:17	10:27:42	VX L*	00:00:32	00:00:55	00:00:26	
8/8/98	VX	0.15	3	20	1	10:51:22	10:52:18	10:52:27	10:52:52	VX L*7	00:00:56	00:00:10	00:00:25	
8/8/98	VX	0.15	3	20	2	11:16:11	11:16:46	11:16:59	11:17:22	Nerve low	00:00:35	00:00:13	00:00:23	
8/8/98	VX	0.29	90	20	1	12:31:40	12:32:41			no alarm	00:01:01	#####	00:00:00	
8/8/98	VX	0.11	90	20	2	12:51:55	12:52:47	12:54:03	12:54:24	Nerve low	00:00:53	00:01:16	00:00:20	
8/8/98	VX	0.1	90	20	1	13:26:17	13:27:14	13:27:52	13:28:10		00:00:57	00:00:38	00:00:18	
8/8/98	VX	0.1	90	20	1	14:26:23	14:26:46	14:26:55	14:27:19	Nerve low	00:00:23	00:00:09	00:00:25	
8/8/98	VX	0.31	90	20	2	14:40:50	14:41:48	14:42:00	14:42:23	Nerve low	00:00:57	00:00:12	00:00:23	
8/8/98	VX	0.31	90	20	1	15:03:19	15:04:28	15:04:30	15:05:00		00:01:10	00:00:02	00:00:30	

Date	Agent	Conc (ug/l)	RH	Temp	Det #	On Cond	On Agent	Alarm	Clear	Resp	Cond Time	Alarm Time	Clear Time	Notes
8/8/98	VX	0.31	90	20	1	15:24:01	15:24:58	15:25:12	15:25:36	Nerve low	00:00:57	00:00:15	00:00:24	
8/10/98	HD	2.06	25	52	1	14:19:28	14:20:10			No Alarm	00:00:42	#####	00:00:00	
8/10/98	HD	2.06	25	52	2	14:28:49	14:29:09			No Alarm	00:00:20	#####	00:00:00	
8/11/98	GB	0.112	0	-30	1	13:17:03	13:18:34			No Alarm	00:01:31	#####	00:00:00	peak below edge
8/11/98	GB	0.112	0	-30	2	13:21:04	13:22:10	13:22:18	13:22:40	Nerve low	00:01:05	00:00:08	00:00:22	
8/11/98	GB	0.112	0	-30	1	13:23:39	13:23:52			NO alarm	00:00:13	#####	00:00:00	detector alarmed
8/11/98	GB	0.112	0	-30	2	13:26:02	13:27:06	13:27:11	13:27:35	Nerve low	00:01:03	00:00:05	00:00:24	
8/11/98	GB	0.104	0	-30	1	14:00:30	14:00:45	14:00:57	14:01:20	Nerve low	00:00:15	00:00:12	00:00:23	
8/11/98	GB	0.104	0	-30	2	14:01:49	14:02:58	14:03:04	14:03:25	Nerve low	00:01:08	00:00:06	00:00:22	
8/11/98	GB	0.104	0	-30	1	14:04:09	14:04:40	14:05:04	14:05:24	Nerve low	00:00:31	00:00:24	00:00:20	
8/11/98	GB	0.104	0	-30	2	14:10:42	14:11:19	14:11:39	14:11:50	Nerve low	00:00:37	00:00:20	00:00:11	
8/12/98	GD	0.114	0	-30	1	10:02:31	10:03:09	10:03:24	10:03:50	Nerve med	00:00:38	00:00:16	00:00:25	
8/12/98	GD	0.114	0	-30	2	10:04:38	10:06:08	10:06:15	10:06:40	Nerve med	00:01:30	00:00:07	00:00:25	
8/12/98	GD	0.114	0	-30	1	10:07:29	10:10:37	10:10:49	10:11:22	Nerve med	00:03:08	00:00:12	00:00:33	
8/12/98	GD	0.114	0	-30	2	10:11:49	10:12:47	10:12:54	10:13:17	Nerve med	00:00:57	00:00:07	00:00:24	
8/12/98	GD	0.114	0	-30	1	10:13:39	10:17:08	10:17:22	10:17:47	Nerve med	00:03:29	00:00:14	00:00:25	
8/12/98	GD	0.114	0	-30	2	10:18:12	10:19:08	10:19:15	10:19:39	Nerve med	00:00:57	00:00:07	00:00:24	
8/13/98	GB	0.121	29	52	1	10:44:50	10:47:04	10:47:24	10:47:45	Nerve low	00:02:14	00:00:20	00:00:20	
8/13/98	GB	0.121	29	52	2	10:48:08	10:50:06	10:50:27	10:50:48	Nerve low	00:01:58	00:00:21	00:00:21	
8/13/98	GB	0.121	29	52	1	10:52:36	10:53:44	10:54:03	10:54:23	Nerve low	00:01:07	00:00:19	00:00:20	
8/13/98	GB	0.121	29	52	2	10:55:06	10:56:06	10:56:25	10:56:48	Nerve low	00:01:00	00:00:20	00:00:23	
8/13/98	GB	0.125	29	52	1	11:09:09	11:10:34	11:10:55	11:11:15	Nerve low	00:01:25	00:00:20	00:00:20	
8/13/98	GB	0.125	29	52	2	11:11:33	11:13:03	11:13:23	11:13:43	Nerve low	00:01:29	00:00:20	00:00:20	
8/13/98	GB	0.125	29	52	1	11:15:23	11:16:31	11:16:47	11:17:07	Nerve low	00:01:08	00:00:16	00:00:20	
8/13/98	GB	0.125	29	52	2	11:17:23	11:18:34	11:18:52	11:19:12	Nerve low	00:01:10	00:00:19	00:00:20	
8/13/98	GD	0.126	29	52	1	13:49:38	13:51:02	13:52:23	13:52:43	Nerve low	00:01:25	00:01:20	00:00:20	
8/13/98	GD	0.126	29	52	2	13:53:05	13:55:04	13:55:12	13:55:32	Nerve low	00:01:59	00:00:08	00:00:20	
8/13/98	GD	0.126	29	52	1	14:03:27	14:04:01	14:04:08	14:04:28	Nerve low	00:00:34	00:00:07	00:00:20	
8/13/98	GD	0.126	29	52	2	14:05:13	14:05:56	14:06:06	14:06:26	Nerve low	00:00:44	00:00:09	00:00:21	
8/13/98	GD	0.118	29	52	1	14:28:16	14:29:11			no alarm	00:00:55	#####	00:00:00	
8/13/98	GD	0.118	29	52	2	14:32:20	14:33:10	14:33:18	14:33:38	Nerve low	00:00:50	00:00:08	00:00:20	
8/13/98	GD	0.118	29	52	1	14:39:30	14:40:38	14:40:53	14:41:16	Nerve low	00:01:08	00:00:14	00:00:23	
8/13/98	GD	0.118	29	52	2	14:41:38	14:42:43	14:42:51	14:43:12	Nerve low	00:01:05	00:00:08	00:00:21	
8/14/98	VX	0.055	26	52	1	10:00:28	10:01:12	10:01:40	10:02:03	Nerve low	00:00:43	00:00:28	00:00:23	
8/14/98	VX	0.055	26	52	2	10:08:44	10:09:15	10:09:23	10:09:46	Nerve low	00:00:31	00:00:08	00:00:23	

Date	Agent	Conc (ug/l)	RH	Temp	Det #	On Cond	On Agent	Alarm	Clear	Resp	Cond Time	Alarm Time	Clear Time	Notes
8/14/98	VX	0.055	26	52	1	10:24:07	10:24:58	10:25:13	10:25:39	Nerve low	00:00:51	00:00:15	00:00:26	
8/14/98	VX	0.055	26	52	2	10:39:11	10:39:55	10:40:00	10:40:26	Nerve low	00:00:44	00:00:06	00:00:26	
8/14/98	VX	0.055	26	52	1	10:43:32	10:44:13	10:44:43	10:45:14	Nerve low	00:00:41	00:00:30	00:00:31	
8/14/98	VX	0.055	26	52	2	11:02:43	11:03:14	11:03:33	11:03:59	Nerve low	00:00:31	00:00:19	00:00:26	
8/17/98	HD	2.63	0	0	1	13:56:06	13:57:06	13:57:13	13:58:03	BLS MED	00:01:00	00:00:07	00:00:50	
8/17/98	HD	1.93	0	0	2	14:05:46	14:07:03	14:07:10	14:07:56	Bls Low	00:01:17	00:00:07	00:00:46	
8/17/98	HD	1.93	0	0	1	14:11:42	14:13:03	14:13:09	14:13:55	Bls Med	00:01:21	00:00:06	00:00:47	
8/17/98	HD	1.93	0	0	2	14:27:27	14:28:35	14:28:40	14:29:13	Bls Low	00:01:08	00:00:05	00:00:33	
8/17/98	HD	1.93	0	0	1	14:36:19	14:37:28	14:37:34	14:38:21	Bls Low	00:01:09	00:00:05	00:00:47	
8/17/98	HD	1.93	0	0	2	14:48:21	14:49:05	14:49:09	14:49:53	Bls Low	00:00:44	00:00:04	00:00:44	
8/18/98	VX	0.09	0	0	1	09:31:57	09:33:06	09:34:34	09:34:56	Ner low	00:01:09	00:01:27	00:00:22	
8/18/98	VX	0.09	0	0	2	10:08:59	10:10:02	10:10:38	10:11:02	Ner low	00:01:03	00:00:37	00:00:23	
8/18/98	VX	0.09	0	0	1	10:26:42	10:28:06	10:29:44	10:30:07	Ner low	00:01:24	00:01:38	00:00:23	autocal @ 1min
8/18/98	VX	0.07	0	0	2	10:58:04	10:58:48	10:59:36	10:59:59	Ner low	00:00:44	00:00:48	00:00:22	
8/18/98	VX	0.07	0	0	1	11:13:04	11:15:45	11:16:34	11:16:57	Ner low	00:02:41	00:00:49	00:00:23	
8/18/98	VX	0.07	0	0	2	11:36:04	11:37:06	11:37:20	11:37:48	Ner low	00:01:01	00:00:14	00:00:28	

## Startup Test Checklist and Test Data Sheet

Detector S/N 980206-4 Date: 8-3-98  
 E ETG-1  
 Software Ver. 5.02B-1 Time: 9:33  
 Location: ERDEC E3510

### 1. Initial Power On

- A. Uncap the air inlet and air exhaust. Place charcoal filter over the inlet.
- B. Connect communication cable and begin "Logall" file.  
 Record datafile name T04/00.DAT  
 (Attach copy of data with test records)
- C. Turn horn volume to full (clockwise)
- D. Connect power and begin stopwatch.
- E. Verify startup sequence.

	Pass	Fail
Display shows M43-APD	<u>✓</u>	<u>      </u>
Display shows the Software Version	<u>✓</u>	<u>      </u>
Display shows LED TEST followed by test patterns	<u>✓</u>	<u>      </u>
Display shows HORNTTEST and horn beeps twice	<u>✓</u>	<u>      </u>
Display shows SELFTEST	<u>✓</u>	<u>      </u>
Display shows STANDBY and backflush begins	<u>✓</u>	<u>      </u>
Display shows READY within 30 minutes after startup	<u>✓</u>	<u>      </u>
Record Time <u>2:38</u>		
Display goes blank approx. 15 seconds after READY	<u>✓</u>	<u>      </u>

Tested by: G. Lozov / G. Weaver Date: 8/3/98

### Confidence Test Data Sheet

Detector S/N 980206-4

Date: 8-3-98

Software Ver. 5.02B-

Time: 9:55

Location: ERDEC E3510

1. Connect communications cable and begin "Logall"

A. Record datafile name T04100.DAT  
(Attach copy of data with test records)

B. Use menu to turn on display (optional)

2. "H" Simulant Test

Startup testing only: elapsed time since power on (min)	<u>6:00</u>		
Challenge time (sec)	<u>1</u>		
Time to alarm (sec)	<u>3</u>		
Horn sounds	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Display correctly identifies Blister (Note 1)	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Record response(s)	<u>NRV</u> L M H <u>BLS</u> L M H	NRV L M H BLS L M H	NRV L M H BLS L M H
Cleardown less than 5 minutes after alarm (mm:ss)	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Record cleardown time	<u>00:24 sec</u>		

Note 1 -- Detector must alarm either BLS or BLS/NRV

3. "G" Simulant Test

Startup testing only: elapsed time since power on (min)	<u>7:00</u>		
Challenge time (sec)	<u>1</u>		
Time to alarm (sec)	<u>2</u>		
Horn sounds	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Display correctly identifies Nerve (Note 1)	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Record response(s)	<u>NRV</u> L M <u>H</u> <u>BLS</u> L M H	NRV L M H BLS L M H	NRV L M H BLS L M H
Cleardown less than 5 minutes after alarm (mm:ss)	Pass / Fail	Pass / Fail	Pass / Fail
Record cleardown time	<u>01:05</u>		

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by: [Signature]

Date: 8/3/98

## Startup Test Checklist and Test Data Sheet

Detector S/N 980206-5      Date: 8-3-98  
 ≡ ETG-2  
 Software Ver. 5.42B-1      Time: 9:45:56  
 Location: ERDEC E3510

### 1. Initial Power On

- A. Uncap the air inlet and air exhaust. Place charcoal filter over the inlet.
- B. Connect communication cable and begin "Logall" file.  
     Record datafile name T05100.DAT  
     (Attach copy of data with test records)
- C. Turn horn volume to full (clockwise)
- D. Connect power and begin stopwatch.
- E. Verify startup sequence.

	Pass	Fail
Display shows M43-APD	<u>✓</u>	<u>      </u>
Display shows the Software Version	<u>✓</u>	<u>      </u>
Display shows LED TEST followed by test patterns	<u>✓</u>	<u>      </u>
Display shows HORNTTEST and horn beeps twice	<u>✓</u>	<u>      </u>
Display shows SELFTEST	<u>✓</u>	<u>      </u>
Display shows STANDBY and backflush begins	<u>✓</u>	<u>      </u>
Display shows READY within 30 minutes after startup	<u>✓</u>	<u>      </u>
Record Time <u>2:38</u>		
Display goes blank approx. 15 seconds after READY	<u>✓</u>	<u>      </u>

Tested by: G. Lutz / G. Weaver      Date 8/3/98

### Confidence Test Data Sheet

Detector S/N 980206-5 Date: 8-3-98  
 Software Ver. 5.02B-1 Time: 9:45:56  
 Location: ERDEC E3510

1. Connect communications cable and begin "Logall"

- A. Record datafile name 705100.DAT  
 (Attach copy of data with test records)
- B. Use menu to turn on display (optional)

2. "H" Simulant Test

Startup testing only: elapsed time since power on (min)	<u>6:00</u>		
Challenge time (sec)	<u>1</u>		
Time to alarm (sec)	<u>3</u>		
Horn sounds	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Display correctly identifies Blister (Note 1)	Pass / Fail	Pass / Fail	Pass / Fail
Record response(s)	<u>NRV</u> L M H <u>BLS</u> L M H	NRV L M H BLS L M H	NRV L M H BLS L M H
Cleardown less than 5 minutes after alarm (mm:ss)	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Record cleardown time	<u>00:32</u>		

Note 1 -- Detector must alarm either BLS or BLS/NRV

3. "G" Simulant Test

Startup testing only: elapsed time since power on (min)	<u>7:00</u>		
Challenge time (sec)	<u>1</u>		
Time to alarm (sec)	<u>3</u>		
Horn sounds	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Display correctly identifies Nerve (Note 1)	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Record response(s)	<u>NRV</u> L <u>M</u> H BLS L M H	NRV L M H BLS L M H	NRV L M H BLS L M H
Cleardown less than 5 minutes after alarm (mm:ss)	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Record cleardown time	<u>00:35</u>		

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by: H. Weaver / H. Jager

Date

8/3/98







**Test Location:**

**Date:**

Operator:

[illegible]

end  
LOG1:WB1-update 11-Jun-97



# M43 Upgrade

8/3/98

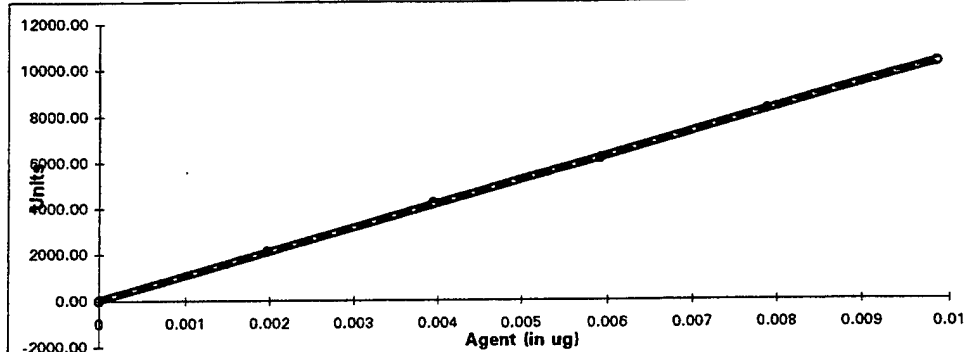
Monday

## Targets:

Agent = GD  
Conc. =  µg/l  
Temp = 20 °C  
RH = 0 %  
Std #1 = 1.9720 ng/µl  
Std #2 =  ng/µl

## MINICAMS:

Flow = 100 cc/m  
Time = 30 sec.



Factor: 1 0.0002

(µl)	(units)
0	0
1	2119
2	4215
3	6177
4	8278
5	10280

Project: Provide GD, GB, GA, VX, and HD to contractor to set windows

Operators: Juan & Sonny

## NOTES:

- 1 Set agent generator for GD.
- 2 Run Standard Curve using GD @ 1.972 ng/µl

	GD	Log File
1	2245	0609
2	4698	0614
3	6926	0618
4	9138	0623
5	10280	0641

GD Generator Settings			
agent =	1.5 cc/m	gen temp =	20.0 C
dry air =	3.0 l/m	gen RH =	0 %
wet air =	0.0 l/m	amb temp =	
agt temp =	5 C	amb RH =	



- 3 Sample # 1 (30 sec @ 100 cc/min) = 2941 nA = .056 mg/m<sup>3</sup>
- 4 Increase Agent concentration.
- 5 Sample # 2 (30 sec @ 100 cc/min) = 7432 nA = .142 mg/m<sup>3</sup>
- 6 Decrease Agent concentration.
- 7 Sample # 4 (30 sec @ 100 cc/min) = 3922 nA = .074 mg/m<sup>3</sup>
- 8 Sample # 5 (30 sec @ 100 cc/min) = 6308 nA = .12 mg/m<sup>3</sup>
- 9 Sample # 6 (30 sec @ 100 cc/min) = 6142 nA = .117 mg/m<sup>3</sup>
- 10 Start test - MSS & Intellitec
- 11 Sample # 7 (30 sec @ 100 cc/min) = 5534 nA = .105 mg/m<sup>3</sup>
- 12 Continue testing
- 13 Sample # 8 (30 sec @ 100 cc/min) = 4793 nA = .091 mg/m<sup>3</sup>
- 14 Start test - ETG

Log file = 0833

Log file = 0856

Log file = 1026

Log file = 1142

Log file = 1250

Log file = 1344

Operator \_\_\_\_\_

Operator \_\_\_\_\_

### Confidence Test Data Sheet

Detector S/N 980206-44  
 Software Ver. 5.02B-1  
 Location: ERDEC E3510

Date: 8-4-98  
 Time: 08:35

1. Connect communications cable and begin "Logall"

- A. Record datafile name T04107.DAT  
 (Attach copy of data with test records)
- B. Use menu to turn on display (optional)

2. "H" Simulant Test

Startup testing only: elapsed time since power on (min)	—		
Challenge time (sec)	1		
Time to alarm (sec)	2		
Horn sounds	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Display correctly identifies Blister (Note 1)	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Record response(s)	NRV L M H <u>BLS</u> L <u>M</u> H	NRV L M H BLS L M H	NRV L M H BLS L M H
Cleardown less than 5 minutes after alarm (mm:ss)	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Record cleardown time	0:25		

Note 1 -- Detector must alarm either BLS or BLS/NRV

3. "G" Simulant Test

Startup testing only: elapsed time since power on (min)			
Challenge time (sec)	1		
Time to alarm (sec)	3		
Horn sounds	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Display correctly identifies Nerve (Note 1)	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Record response(s)	NRV <u>L</u> M H <u>BLS</u> <u>L</u> M H	NRV L M H BLS L M H	NRV L M H BLS L M H
Cleardown less than 5 minutes after alarm (mm:ss)	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Record cleardown time	0:40		

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by: [Signature]

Date: 8-4-98

### Confidence Test Data Sheet

Detector S/N 980206-25 Date: 8-4-98  
 Software Ver. 5.02 B-1 Time: 08:30  
 Location: ERDEC E3510

1. Connect communications cable and begin "Logall"

- A. Record datafile name T05107.DAT  
 (Attach copy of data with test records)
- B. Use menu to turn on display (optional)

2. "H" Simulant Test

Startup testing only: elapsed time since power on (min)	—		
Challenge time (sec)	1		
Time to alarm (sec)	5		
Horn sounds	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Display correctly identifies Blister (Note 1)	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Record response(s)	NRV L M H <u>BLS</u> L M H	NRV L M H BLS L M H	NRV L M H BLS L M H
Cleardown less than 5 minutes after alarm (mm:ss)	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Record cleardown time	0:34		

Note 1 -- Detector must alarm either BLS or BLS/NRV

3. "G" Simulant Test

Startup testing only: elapsed time since power on (min)	—		
Challenge time (sec)	1		
Time to alarm (sec)	2		
Horn sounds	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Display correctly identifies Nerve (Note 1)	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Record response(s)	NRV L M H <u>BLS</u> L M H	NRV L M H BLS L M H	NRV L M H BLS L M H
Cleardown less than 5 minutes after alarm (mm:ss)	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Record cleardown time	1:27		

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by: [Signature] Date 8-4-98

[illegible]



[illegible]

LOGT.WBT update 11 Jun 97



end  
LOG1:WB1 update 11 Jun 97

# M43 Upgrade

8/4/98

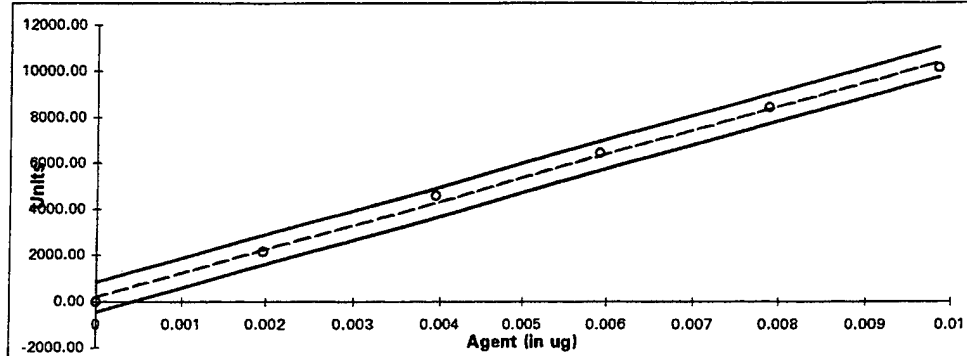
Tuesday

## Targets:

Agent = GD  
Conc. =  $\mu\text{g/l}$   
Temp = 20  $^{\circ}\text{C}$   
RH = 90 %  
Std #1 = 1.9720 ng/ $\mu\text{l}$   
Std #2 = ng/ $\mu\text{l}$

## MINICAMS:

Flow = 25 cc/m  
Time = 15 sec.



Factor:	1	0.0012
	( $\mu\text{l}$ )	(units)
0	0	0
1	2150	2150
2	4606	4606
3	6442	6442
4	8437	8437
5	10157	10157

Project: Provide GD, GB, GA, VX, and HD to contractor to set windows

Operators: Juan & Sonny

## NOTES:

- 1 Set agent generator for GD @ 90 % RH.
- 2 Run Standard Curve using GD @ 1.972 ng/ $\mu\text{l}$

	GD	Log File
1	2150	0618
2	4606	0648
3	6442	0627
4	8437	0633
5	10157	0638

GD Generator Settings			
agent =	1.5 cc/m	gen temp =	20.0 C
dry air =	0.0 l/m	gen RH =	90 %
wet air =	3.0 l/m	amb temp =	
agt temp =	5 C	amb RH =	



- 3 Sample # 1 (30 sec @ 100 cc/min) = 3054 nA = .055 mg/ $\text{m}^3$ .
- 4 Increase Agent concentration
- 5 Sample # 2 (30 sec @ 100 cc/min) = 542 nA = .007 mg/ $\text{m}^3$ .
- 6 Sample # 3 (30 sec @ 100 cc/min) = 5425 nA = .101 mg/ $\text{m}^3$ .
- 7 Sample # 4 (30 sec @ 100 cc/min) = 6509 nA = .122 mg/ $\text{m}^3$ .
- 8 Begin testing ETG, MSS, Intellitec
- 9 Sample # 5 (30 sec @ 100 cc/min) = 6975 nA = .13 mg/ $\text{m}^3$ .
- 10 Begin second trial.
- 11 Sample # 6 (30 sec @ 100 cc/min) = 6530 nA = .12 mg/ $\text{m}^3$ .
- 12 Begin third trial.
- 13 Sample # 7 (30 sec @ 100 cc/min) = 6995 nA = .13 mg/ $\text{m}^3$ .
- 14 Set agent generator for GD 1.649 mg/ $\text{m}^3$
- 15 Sample # 8 (15 sec @ 25 cc/min) = 10867 nA = 1.513 mg/ $\text{m}^3$ .
- 16 Decrease agent concentration.
- 17 Sample # 9 (20 sec @ 25 cc/min) = 9705 nA = 1.102 mg/ $\text{m}^3$ .
- 18 Sample # 10 (15 sec @ 25 cc/min) = 6811 nA = 1.022 mg/ $\text{m}^3$ .
- 19 Start first trial @ 1.022 mg/ $\text{m}^3$
- 20 Sample # 11 (15 sec @ 25 cc/min) = 6775 nA = 1.017 mg/ $\text{m}^3$ .
- 21 Start second trial @ 1.017 mg/ $\text{m}^3$
- 22 Sample # 12 (15 sec @ 25 cc/min) = 6666 nA = 1.017 mg/ $\text{m}^3$ .
- 23 Start third trial @ 1.00 mg/ $\text{m}^3$

Log file = 0712

Log file = 0738

Log file = 0813

Log file = 0823

Log file = 0907

Operator \_\_\_\_\_

Operator \_\_\_\_\_

## Data Entry Form

page 1 of 1

Purpose of test:		Test Location:		Date:		Operator:							
E101		E101 DEC		8/5/98		L0205							
Det#: 980206-04		SWVet# 10202B											
DataFile#	Type	Time	Sample	Conc(mg)	%Rh	Alarm time	Alarm class/id/conc	Chasing time	Clean down time	Comment			
T04115	SILV	8:24	1) Run Air										
			2) Hcount Sample				Alarm			monitored mode			
			3) G-count Sample				NRL Low			"			
T04116	DA7	8:29	Run Air										
		8:32	Hcount Sample				RLS MED			Detected			
		8:34	Gcount Sample				NAL						
		8:35	"				NRL MED						
		8:36	clear										
T04116	SILV		Backfill							PS7 put in backfill			
980206-05	ETV-2												
T05115	SILV	8:40	1) Backfill										
			2) Run Air										
			3) Hcount Sample				ALL			monitored			
			4) Gcount Sample				NRLV			monitored			
T05116	DA7	9:10	Clear										
			Run Air										
		9:14	Hcount				RLS MED						
		9:15	Gcount				NRLV MED						
		9:17:10	Backfill							draft mode			

end  
T05116: WRT update 11 Jun 97  
R020206-05

Purpose of test:		Test Location:	Date:	Operator:						
(ETG 1) GA		ERDOL C	8/5/98	L 0205						
Det#: 980206-04		SWVer#: 5.0.1.1			Temp:			9.10 G-A 0.104		
DataFile#	Type	Time	Sample	Conc(mg)	%Rh	Alarm time	Alarm class/id/conc	Chaing time	Clean down time	Comment
T04117	DA7	9:10	Run Air		Low					
		9:15	Clean Air							
		9:17:00	G-A	0.1		32	NRV Low	32	30	
T04118	SIV	9:55	G-A	0.1		19	NRV	19	29	
T04119	DA7	10:17	Air			45		45	30	
		10:25:30	Clean Air							
		10:31	G-A	0.1		20	NRV Low	20	30	
T04120	DA7	12:01	Run Air		High					G-A gaseous surprise, excess peak
			Clean Air		High					
		13:20	G-A	0.147		23	NRV Low	23	18	
T04121	SIV	14:19	1) G-A	0.111		15	NRV Low	15	30	
			2) Clean down							
T04122	DA7	14:34	Run Air							
		14:50	Clean Air		High					
		14:52	G-A	0.117	High	34	NRV Low	34	29	remain clean down

end

LOG1:WB1 update 11 Jun 97

## Data Entry Form

page 3 of 3

Purpose of test:		Test Location:	Date:	Operator:			
GA	(E76-2)	ERDEC	8/5/97	LOR			
Det#: 98060-05		SWVer#:		Temp: 15°C			
DataFile#	Type	Time	Conc(mg)	%Rh	Alarm time	Alarm class/id/conc	Cleaning time
		dat/sig					
T05117	DA7	5:10		2.5%			
		9:12:30					
		5:34	0.1	2.5%	13	NRV Low	33
T05118	S14	1)	0.1	2.5%	15	NRV	30
		2)					
T05119	DA7	10:33					
		10:46					
		10:44	0.1		10	NRV Low	30
T05120	DA7	13:23		2.5%			
		13:35		High			
		13:40	0.1		23	NRV Low	30
		13:46	0.14		15	NRV Low	30
T05121	S14	14:31	0.111	✓	13	NRV Low	29
				High			
T05122	DA7	14:50					
		15:03					
		15:05	0.115	1.5%	14	NRV Low	31
end							
LOG1:WB1 update 11 Jun 97							

GA core suspect  
Xerus peak  
(Det -04 microscope)





### Startup Test Checklist and Test Data Sheet

Detector S/N 980208-4

Date: 8-6-98

Software Ver. 5.02B-1

Time: 8:25

Location: ERDEC E3510

*Detector has running overnight in fume hood.*

#### 1. Initial Power On

- A. Uncap the air inlet and air exhaust. Place charcoal filter over the inlet.
- B. Connect communication cable and begin "Logall" file.  
Record datafile name T04123.DAT  
(Attach copy of data with test records)
- C. Turn horn volume to full (clockwise)
- D. Connect power and begin stopwatch.
- E. Verify startup sequence.

	Pass	Fail
Display shows M43-APD	<u>✓</u>	<u>      </u>
Display shows the Software Version	<u>✓</u>	<u>      </u>
Display shows LED TEST followed by test patterns	<u>✓</u>	<u>      </u>
Display shows HORNTTEST and horn beeps twice	<u>✓</u>	<u>      </u>
Display shows SELFTEST	<u>✓</u>	<u>      </u>
Display shows STANDBY and backflush begins	<u>✓</u>	<u>      </u>
Display shows READY within 30 minutes after startup	<u>✓</u>	<u>      </u>
Record Time <u>2:28</u>		
Display goes blank approx. 15 seconds after READY	<u>✓</u>	<u>      </u>

Tested by: *ATW*

Date 8-6-98

# Confidence Test Data Sheet

Detector S/N 980206-4

Date: 8-6-98

Software Ver. 5.02B-1

Time: 8:25

Location: CBD COM E3510

## 1. Connect communications cable and begin "Logall"

A. Record datafile name T04123.DAT  
(Attach copy of data with test records)

B. Use menu to turn on display (optional)

## 2. "H" Simulant Test

Startup testing only: elapsed time since power on (min)			
Challenge time (sec)	<u>1</u>		
Time to alarm (sec)	<u>2</u>		
Horn sounds	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Display correctly identifies Blister (Note 1)	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Record response(s)	NRV L M H <u>BLS</u> L M H	NRV L M H BLS L M H	NRV L M H BLS L M H
Cleardown less than 5 minutes after alarm (mm:ss)	<u>Pass</u> Fail	Pass / Fail	Pass / Fail
Record cleardown time	<u>0:28</u>		

Note 1 -- Detector must alarm either BLS or BLS/NRV

## 3. "G" Simulant Test

Startup testing only: elapsed time since power on (min)			
Challenge time (sec)	<u>1</u>		
Time to alarm (sec)	<u>5</u>		
Horn sounds	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Display correctly identifies Nerve (Note 1)	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Record response(s)	<u>NRV</u> L M H BLS L M H	NRV L M H BLS L M H	NRV L M H BLS L M H
Cleardown less than 5 minutes after alarm (mm:ss)	<u>Pass</u> Fail	Pass / Fail	Pass / Fail
Record cleardown time	<u>0:35</u>		

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by: [Signature]

Date 8-6-98

### Startup Test Checklist and Test Data Sheet

Detector S/N 980206-5 Date: 8-6-98  
Software Ver. 5.02B-1 Time: 8:08:34  
Location: ERDEC E3510

#### 1. Initial Power On

- A. Uncap the air inlet and air exhaust. Place charcoal filter over the inlet.
- B. Connect communication cable and begin "Logall" file.  
Record datafile name T05123.DAT  
(Attach copy of data with test records)
- C. Turn horn volume to full (clockwise)
- D. Connect power and begin stopwatch.
- E. Verify startup sequence.

	Pass	Fail
Display shows M43-APD	<u>✓</u>	<u>      </u>
Display shows the Software Version	<u>✓</u>	<u>      </u>
Display shows LED TEST followed by test patterns	<u>✓</u>	<u>      </u>
Display shows HORNTTEST and horn beeps twice	<u>✓</u>	<u>      </u>
Display shows SELFTEST	<u>✓</u>	<u>      </u>
Display shows STANDBY and backflush begins	<u>✓</u>	<u>      </u>
Display shows READY within 30 minutes after startup	<u>✓</u>	<u>      </u>
Record Time <u>2:38</u>		
Display goes blank approx. 15 seconds after READY	<u>✓</u>	<u>      </u>

Tested by: [Signature]

Date 8-6-98

# Confidence Test Data Sheet

Detector S/N 980206-5

Date: 8-6-98

Software Ver. 5.02B-1

Time: 08:34

Location: ESS10 ERDEC

## 1. Connect communications cable and begin "Logall"

A. Record datafile name T05123.DAT  
(Attach copy of data with test records)

B. Use menu to turn on display (optional)

## 2. "H" Simulant Test

Startup testing only: elapsed time since power on (min)			
Challenge time (sec)	<u>1</u>		
Time to alarm (sec)	<u>5</u>		
Horn sounds	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Display correctly identifies Blister (Note 1)	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Record response(s)	NRV L M H <u>BLS</u> L M H	NRV L M H BLS L M H	NRV L M H BLS L M H
Cleardown less than 5 minutes after alarm (mm:ss)	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Record cleardown time	<u>0:37</u>		

Note 1 -- Detector must alarm either BLS or BLS/NRV

## 3. "G" Simulant Test

Startup testing only: elapsed time since power on (min)			
Challenge time (sec)	<u>1</u>		
Time to alarm (sec)	<u>10</u>		
Horn sounds	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Display correctly identifies Nerve (Note 1)	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Record response(s)	NRV L M H <u>BLS</u> L M H	NRV L M H BLS L M H	NRV L M H BLS L M H
Cleardown less than 5 minutes after alarm (mm:ss)	<u>Pass</u> / Fail	Pass / Fail	Pass / Fail
Record cleardown time	<u>1:45</u>		

Note 2 -- Detector must alarm either NRV or NRV/BLS

Tested by: L. Weaver

Date: 8-6-98

[illegible]

[illegible]

end  
LOG1.WB1 update 11 Jun 97

# M43 Upgrade

8/6/98

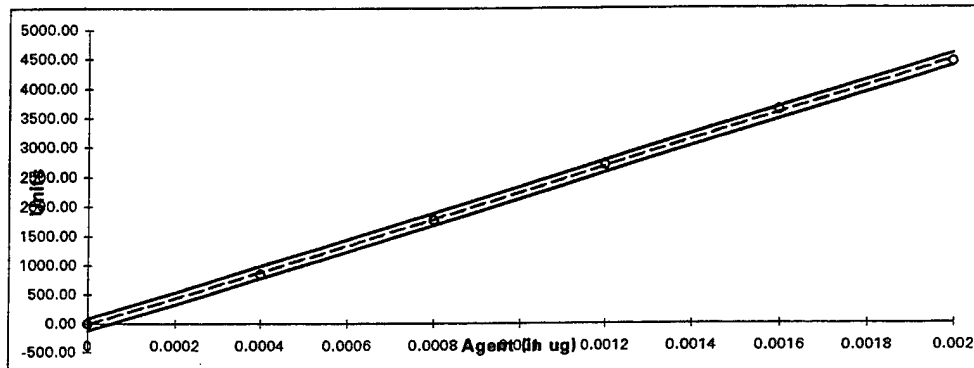
Thursday

## Targets:

Agent = GB  
Conc. =  µg/l  
Temp = 20 °C  
RH = 10 %  
Std #1 = 0.3998 ng/µl  
Std #2 =  ng/µl

## MINICAMS:

Flow = 50 cc/m  
Time = 15 sec.



Factor:	1	0.0001
	(µl)	(units)
	0	0
	1	846
	2	1768
	3	2705
	4	3636
	5	4450

Project: Provide GD, GB, GA, VX, and HD to contractor to set windows

Operators: Juan & Sonny

## NOTES:

- 1 Set agent generator for GB low RH.
- 2 Run Standard curve using GB @ .3998 ng/ul.

0	0	Log File
1	846	0631
2	1768	0636
3	2705	0641
4	3636	0646
5	4450	0651

GB Generator Settings			
agent =	.25 cc/m	gen temp =	20.0 C
dry air =	3.0 l/m	gen RH =	0 %
wet air =	0.0 l/m	amb temp =	
agt temp =	5 C	amb RH =	

- 3 Sample # 1, (15 sec @ 50 cc/min) = 1383 nA = .05 mg/m3.
- 4 Increase agent concentration
- 5 Sample # 2, (15 sec @ 50 cc/min) = 1787 nA = .064 mg/m3.
- 6 Increase agent concentration
- 7 Sample # 3, (15 sec @ 50 cc/min) = 2531 nA = .09 mg/m3.
- 8 Increase agent concentration
- 9 Sample # 4, (15 sec @ 50 cc/min) = 2760 nA = .099 mg/m3.
- 10 Begin trail #1
- 11 Sample # 5, (15 sec @ 50 cc/min) = 3278 nA = .113 mg/m3.
- 12 Begin trail #2
- 13 Sample # 6, (15 sec @ 50 cc/min) = 3158 nA = .113 mg/m3.
- 14 Begin trail #3
- 15 Raise humidity. RH = 90%
- 16 Sample # 7, (15 sec @ 50 cc/min) = 3160 nA = .113 mg/m3.
- 17 Sample # 8, (15 sec @ 50 cc/min) = 2459 nA = .088 mg/m3.
- 18 Increase agent concentration
- 19 Sample # 9, (15 sec @ 50 cc/min) = 3021 nA = .108 mg/m3.
- 20 Begin trail #1 @ 90% RH
- 21 Sample # 10, (15 sec @ 50 cc/min) = 3545 nA = .126 mg/m3.
- 22 Sample # 11, (15 sec @ 50 cc/min) = 3039 nA = .109 mg/m3.
- 23 Begin trail #2 @ 90% RH
- 24 Sample # 12, (15 sec @ 50 cc/min) = 3200 nA = .114 mg/m3.
- 25 Begin trail #3 @ 90% RH

Log File = 0742

Log File = 0917

Log File = 0952

Log File = 1209

Log File = 1224

Log File = 1249

Log File = 1309

Log File = 1334

Operator \_\_\_\_\_

Operator \_\_\_\_\_



# Data Entry Form

[illegible]

Purpose of test:		Test Location:		Date:		Operator:			
HD		ERDEC		8/7/98		Lopez			
Def#: 980206-04		SWVer#: 5018				Temp: 20°C			
DataFile#	Type	Time	Sample	Conc(mg)	%Rh	Alarm time	Alarm class/id/conc	Chalng time	Clean down time
T04125	DAT	8:33	Run Air						
172		8:47	HF Clean Air	1.9	Low				
		8:49	HD	1.9	Low	6	Low	6	30
				2.12					
T04133	SIG	9:20	HD	2.12	Low	4	Low	4	29
			2) (Temp down)						
									2.407
T04134	DAT	9:36	Run Air						
		9:51	Clean Air						
		9:53	HD	2.4	Low	6	Low	6	29
T04135	DAT	10:20	Run Air		High				
		10:47	Clean Air						
		10:49	HD	2.197	High	7	Low	7	29
		11:29	HD	2.154	High	3	Low	3	29
T04136	SIG								
T04137	DAT	11:43	Run Air						
		11:58	Clean Air		88%				
		11:59	HD	2.258	High	4	Low	4	29
									(307°C)

end

LOG1:WB1 update 11 JUN 97

Purpose of test:		Test Location:		Date:		Operator:							
H-D		CADC		8/17/58		L020							
LTS 2		SWver#:				Temp:							
Det#: 870206-05		Sample		Conc(mg)		%Rh		Alarm time		Alarm class/id/conc		Chalng time	
DataFile#	Type	Time	Sample	Conc(mg)	%Rh	Alarm time	Alarm class/id/conc	Chalng time	Clean down time	Comment			
T05125	DA7	8:57	Clean Air										
132		8:58	(H)	1.9	Low	3	BLU Low	3	29				
T05133	SLV	9:57	H-D	2.12	Low	3	BLU Low	3	26				
T05134	DA7	9:54	Run Air										
		10:02	Clean Air										
		10:04	H-D	2.4	Low	9	BLU Low	9	27				
										add humidity to H-D 10:44 2:13			
T05135	DA7	10:50	Run Air		88%								
		11:04	Clean Air										
		11:06	H-D	2.2	88%	7	BLU Low	7	30				
T05136	SLV		H-D	2.154	86%	8	BLU Low	8	29				
T05137	DA7	12:00	Run Air										
		12:18	Clean Air		88%								
		12:11	H-D	2.2	88%	4	BLU Low	4	26				
										(3000)			





# M43 Upgrade

8/7/98

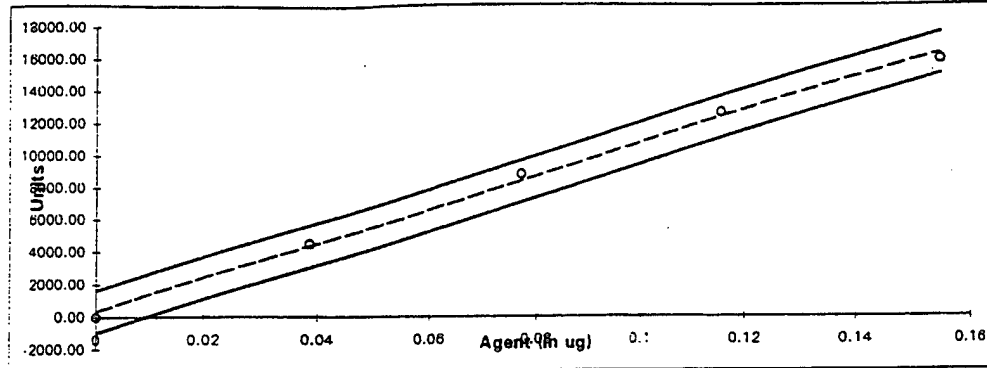
Friday

## Targets:

Agent = HD  
Conc. =  $\mu\text{g/l}$   
Temp = 20  $^{\circ}\text{C}$   
RH = 10 %  
Std #1 = 38.60 ng/ $\mu\text{l}$   
Std #2 = ng/ $\mu\text{l}$

## MINICAMS:

Flow = 20 cc/m  
Time = 8 sec.



Factor:	1	0.0251
( $\mu\text{l}$ )	(units)	
0	0	
1	4482	
2	8783.9	
3	12646.9	
4	15949.1	

Project: Provide GD, GB, GA, VX, and HD to contractor to set windows

Operators: Juan & Sonny

## NOTES:

- 1 Set agent generator for HD low RH.
- 2 Run Standard curve using HD @ 38.60 ng/ $\mu\text{l}$ .

0	0
1	4482
2	8783.9
3	12646.9
4	15949.1

HD Generator Settings			
agent =	.25 cc/m	gen temp =	20.0 C
dry air =	3.0 l/m	gen RH =	0 %
wet air =	0.0 l/m	amb temp =	
agt temp =	20 C	amb RH =	3 %

- 3 Sample # 1, (50 sec @ 50 cc/min) = 13812 nA = 3.11 mg/ $\text{m}^3$ .
- 4 Increase agent concentration
- 5 Sample # 2, (50 sec @ 50 cc/min) = 8911.5 nA = 1.9771 mg/ $\text{m}^3$ .
- 6 Sample # 3, (50 sec @ 50 cc/min) = 8720 nA = 1.933 mg/ $\text{m}^3$ .
- 7 Begin Trial # 1 @ 1.933 mg/ $\text{m}^3$
- 8 Sample # 4, (50 sec @ 50 cc/min) = 9528 nA = 2.12 mg/ $\text{m}^3$ .
- 9 Begin Trial # 2 @ 2.12 mg/ $\text{m}^3$
- 10 Sample # 5, (50 sec @ 50 cc/min) = 9214 nA = 2.047 mg/ $\text{m}^3$ .
- 11 Begin Trial # 3 @ 2.047 mg/ $\text{m}^3$
- 12 Raise Humidity. RH = 90%
- 13 Sample # 6, (50 sec @ 50 cc/min) = 10804 nA = 2.415 mg/ $\text{m}^3$ .
- 14 Lower concentration
- 15 Sample # 7, (50 sec @ 50 cc/min) = 9859 nA = 2.197 mg/ $\text{m}^3$ .
- 16 Begin Trial # 1 @ 1.933 mg/ $\text{m}^3$  and 90% RH
- 17 Sample # 8, (50 sec @ 50 cc/min) = 9677 nA = 2.154 mg/ $\text{m}^3$ .
- 18 Begin Trial # 1 @ 2.154 mg/ $\text{m}^3$  and 90% RH
- 19 Sample # 9, (50 sec @ 50 cc/min) = 10126 nA = 2.258 mg/ $\text{m}^3$ .
- 20 Begin Trial # 1 @ 2.258 mg/ $\text{m}^3$  and 90% RH
- 21 Sample # 10, (8 sec @ 20 cc/min) = 3238 nA = 10.39 mg/ $\text{m}^3$ .
- 22 Sample # 11, (8 sec @ 20 cc/min) = 8126 nA = 2860 mg/ $\text{m}^3$ .
- 23 Sample # 12, (8 sec @ 20 cc/min) = 10349 nA = 36 mg/ $\text{m}^3$ .
- 24 Begin Trial # 1 @ 36 mg/ $\text{m}^3$
- 25 Sample # 13, (8 sec @ 20 cc/min) = 9892 nA = 34 mg/ $\text{m}^3$ .
- 26 Begin Trial # 2 @ 34 mg/ $\text{m}^3$
- 27 Sample # 14, (8 sec @ 20 cc/min) = 15006 nA = 52.917 mg/ $\text{m}^3$ .
- 28 Begin Trial # 3 @ 52.917 mg/ $\text{m}^3$

HD Generator Settings			
agent =	.25 cc/m	gen temp =	20.0 C
dry air =	0.0 l/m	gen RH =	0 %
wet air =	3.0 l/m	amb temp =	
agt temp =	20 C	amb RH =	90 %

Operator \_\_\_\_\_

Operator \_\_\_\_\_

[illegible]

Purpose or test:		Test Location:		Date:		Operator:							
EQU 980206-04		ER DEC		8/8/98		LUTOS							
Del#: 980206-04		SWW#: 502G				Temp: 20°C → 18°C							
DataFile#	Type dat/sig	Time	Sample	Conc(mg)	%Rh	Alarm time	Alarm class/id/conc	Chalng time	Clean down time	Comment			
T04142	047	9:45	Clean Air										
		9:46	VX		79%		None	2:30					
		9:57	Clean Air										
		9:58	VX	0.058	38%	5:00	None	1:00	1:24-1:29	10.06 VX conc 0.058 mg/m <sup>3</sup>			
		10:23	Clean Air										
		10:24:39	VX	0.05	79%	55	VX 47	35	26	10.79 VX conc 0.05			
										raised conc about 4X			
T04143	047	10:45	Clean Air										
		10:50:30	VX	0.15	37%	10	VX 47	10	25	re-raises in clean air			
										10:55 AM VX conc 0.15			
		12:29:50	Clean Air							11:40 AM added hum, Lh			
		12:30:52	VX	0.11	88%	—	None	2:30	—	2 concs added 0.29, 0.11			
		12:24	Clean Air							1 conc added 0.1			
		12:25:30	VX	0.1	88%	38	VX	38	18				
										13:45 raised VX conc			
T04144	047	14:01	Clean Air							17:50 VX conc 0.1			
		14:24	Clean		86%					(30°C)			
		14:25	VX	0.31	88%	9	None	9	25	new conc again conc 0.31 mg/m <sup>3</sup>			
		15:03	VX	0.31	88%	2	None	2	30				
T04145	047	15:03	VX										
end													

end  
T04145  
T04145 update 11 Jun 97

11:40 AM added hum, Lh

2

2:30

—

38

18

25

30

35

40

45

50

55

60



Purpose of test:		Test Location:		Date:		Operator:				
E752 GFC 26-05		ERDEC		8/8/97		L0201				
SWver#: SW20		Temp: 28°C								
DataFile#	Type	Time	Sample	Conc(mg)	%Rh	Alarm time	Alarm class/id/conc	Chaling time	Clean down time	Comment
T05142	0AT	10:12	Clean Air							
		10:13:30	VX	0.058	75%	25	NRV Low	25	22	
T05143	0AT	10:56	Room Air							
		11:14	Clean Air							
		11:15	VX	0.15	38%	13	NRV Low	13	23	11:40 add humidity
		12:45	Clean air							
		12:51	VX	70.11	88%	1:16	NRV Low	1:16	20	2 cones and 0.1
T05144	0AT	14:16	Room Air							
		14:35	Clean Air							
		14:40	VX	0.71	88%	12	NRV Low	12	23	
end										
LOG: WBT update 11 Jun 97										

Purpose or test:		Test Location:	Date:	Operator:					
Check out - Asid Gen		ENDEL	8/8/98						
Det#:		SWVer#:		Temp:				Clean	
DataFile#	Type	Sample	Conc(mg %Rh	Alarm time	Alarm class/id/conc	Chaing time	down time	Comment	
7A04002	DAT	7:43	UX?		1735			Residual H10 from 8/7/98	
		7:46:30	UX?		ALS			monitors Residual H10	
		8:22:28			NAV				
7A04003	SIL	1	UX		0.1?	UX647		monitors	
		4							
7A04004	DAT		UX					monitors	
		8:24	UX					D-dust	
		8:25:24	UX		11:27	11:27	11:27		
					3%	UX647	UX647		
7A05004	DAT	8:44	Rem Air						
		8:56	Clean Air						
		8:57:30	UX		11:48	11:48	26	9:57A UX Conc 0.047 mg/m <sup>3</sup>	
					3%	UX2		7:140A 0.026	



Purpose of test:		Test Location:		Date:		Operator:							
Host Evaluation		ERDEC 3510		8-10-98		HJW							
Det#: 980206-4/5		SWVer#: 5.02B-1						Temp: +52 °C		Clean			
DataFile#	Type	Time	Sample	Conc(mg)	%Rh	Alarm time	Alarm class/id/conc	Chaling time	down time	Comment			
T04147	DAT	1040	STARTUP							Detectors have been off since 1600 8/8/98, w/ inlet & exhaust caps not replaced. Began ramp to +52 °C @ approx. 0730 this morning			
T05147	DAT	1047	STARTUP										
T04148	DAT	1059	C-AIR				No Alarm						
		1102	H-CONF										
		1103	G-CONF				NRV LOW						
		1107	H-CONF				No Alarm						
TA04149	DAT	1118	HD	1.95			No Alarm 30"						
T05148	DAT	1108	H-CONF				No Alarm 5						
		1110	G-CONF				NRV HI						
TA04150	SIG	1125	C-AIR										
TA05150	SIG	1135	C-AIR										
										*** 1145: Removed			
										use bottom from both detectors.			

Purpose of test:		Test Location:		Date:		Operator:			
Load Evaluation		3510		8-10-98		LJW			
Det#: #4 & #5		SWVer#: #5028-1						Temp: +52 °C	
DataFile#	Type	Time	Sample	Conc(mg)	%Rh	Alarm time	Alarm class/id/conc	Chalng time	Clean down time
T04151	SIG	1148	C-AIR						
T04152	SIG	1252 1255	F-AIR						
T04153	DAT	1254	F-AIR						
		1255	H CONF				No ALARM	2	
			H CONF				No ALARM	10	
		1258	HD	1.95			No ALARM	30	
T05152	SIG	1300	F-AIR						
T05153	DAT	1302	F-AIR						
T04154	DAT	1402	F-AIR						
		1403	H CONF				No ALARM	5	
		1404	G CONF				NRV HI	1	
		1415	HD	1.95			No ALARM	60	
T05154	DAT	1418	F-AIR						
			H-CONF				No ALARM	5	
			G CONF				NRV MED	1	
			HD				No ALARM	60	

# Data Entry Form

end  
LOG1.WB1 update 11 Jun 97

# M43 Upgrade

8/10/98

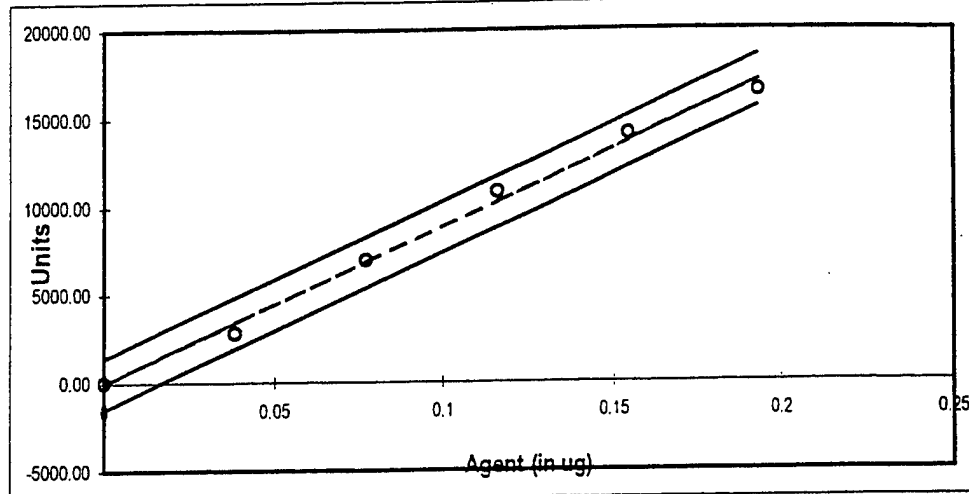
Monday

## Targets:

Agent = HD  
Conc. =  µg/l  
Temp = 20 °C  
RH = 10 %  
Std #1 = 38.60 ng/µl  
Std #2 =  ng/µl

## MINICAMS:

Flow = 100 cc/m  
Time = 30 sec.



Factor:	1	0.0328
(µl)	(units)	
0	0	
1	2780.5	
2	6942.2	
3	10808	
4	14063	
5	16490.7	

Project: Provide GD, GB, GA, VX, and HD to contractor to set windows

Oper 1

## NOTES:

- 1 Set agent generator for HD @ 52 C and ~25% RH.
- 2 Run Standard curve using HD @ 38.6 ng/µl.

1	2780.5
2	6942.2
3	10808
4	14063
5	16490.7

HD Generator Settings			
agent =	200 cc/m	gen temp =	20 C
dry air =	2.25 l/m	gen RH =	25 %
wet air =	0.75 l/m	mb temp =	18 C
agt temp =	20 C	amb RH =	0 %

- 3 Sample # 1, 30 sec @ 100 cc/min = 14949.7 nA = 3.38 mg/m<sup>3</sup>.
- 4 Decrease agent concentration.
- 5 Sample # 2, 30 sec @ 100 cc/min = 8589.1 nA = 1.95 mg/m<sup>3</sup>.
- 6 Sample # 2, 30 sec @ 100 cc/min = 8759.5 nA = 1.99 mg/m<sup>3</sup>.
- 7 Sample # 3, 30 sec @ 100 cc/min = 9092.5 nA = 2.06 mg/m<sup>3</sup>.
- 8 Begin trail # 1 @ 2.06 mg/m<sup>3</sup>

Operator \_\_\_\_\_

Operator \_\_\_\_\_





end  
LOGI-WB1 Update 11 Jun 97





# M43 Upgrade

8/11/98

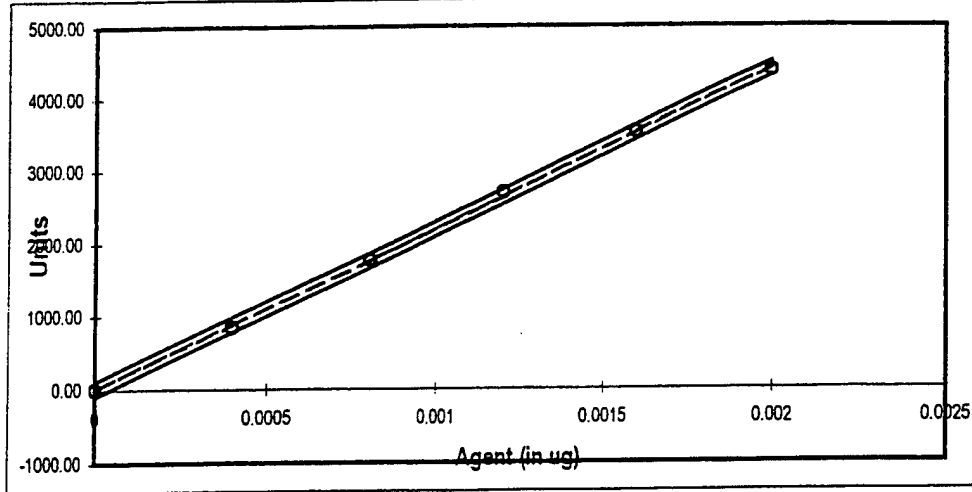
Tuesday

## Targets:

Agent = GB  
 Conc. =  µg/l  
 Temp = 20 °C  
 RH = 10 %  
 Std #1 = 0.3998 ng/µl  
 Std #2 =  ng/µl

## MINICAMS:

Flow = 50 cc/m  
 Time = 15 sec.



Factor:	1	0.0001
	(µl)	(units)
	0	0
	1	841
	2	1767
	3	2697
	4	3526
	5	4367

Project: Provide GD, GB, GA, VX, and HD to contractor to set windows

Oper 1

## NOTES:

- 1 Set agent generator for GB @ -30 C.
- 2 Run Standard curve using GB @ .3998 ng/ul.

		log file
1	841	0633
2	1767	638
3	2697	642
4	3526	647
5	4367	652

GB Generator Settings			
agent =	cc/m	gen temp =	C
dry air =	3.00 l/m	gen RH =	25 %
wet air =	0.00 l/m	mb temp =	18 C
agt temp =	20 C	amb RH =	0 %

- 3 Intellitec and MSS detectors were taken out of hood for repairment
- 4 Sample # 1, 15 sec @ 50 cc/min = 3094 nA = .112 mg/m3 Logfile = 1204
- 5 Start test on ETG Detectors @ .112 mg/m3
- 6 Sample # 2, 15 sec @ 50 cc/min = 3559 nA = .129 mg/m3 Logfile = 1232
- 7 Lower agent concentration
- 8 Sample # 3, 15 sec @ 50 cc/min = 2857 nA = .104 mg/m3 Logfile = 1250
- 9 Trail # 2, @ .104 mg/m3.
- 10 Start test on Intellitec Detectors @ .104 mg/m3

Operator \_\_\_\_\_

Operator \_\_\_\_\_

# Startup Test Checklist and Test Data Sheet

Detector S/N 980206-4 Date: 8-12-98

Software Ver. 5.02B-1 Time: 08:40

Location: ERDEC E3510

## 1. Initial Power On

- A. Uncap the air inlet and air exhaust. Place charcoal filter over the inlet.
- B. Connect communication cable and begin "Logall" file.  
Record datafile name TD4160.DAT  
(Attach copy of data with test records)
- C. Turn horn volume to full (clockwise)
- D. Connect power and begin stopwatch.
- E. Verify startup sequence.

	Pass	Fail	
Display shows M43-APD	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Display shows the Software Version	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Display shows LED TEST followed by test patterns	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Display shows HORNTTEST and horn beeps twice	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Display shows SELFTEST	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Display shows STANDBY and backflush begins	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Display shows READY within 30 minutes after startup	<input checked="" type="checkbox"/>	<input type="checkbox"/>	8:42:42
Record Time <u>2:38</u>			8:40:12
Display goes blank approx. 15 seconds after READY	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2:30

Tested by: [Signature]

Date 8-12-98

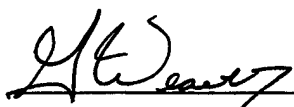
### Startup Test Checklist and Test Data Sheet

Detector S/N 980206-5      Date: 8-12-98  
 Software Ver. 5.02B-1      Time: 08:50  
 Location: ERDEC 3510

#### 1. Initial Power On

- A. Uncap the air inlet and air exhaust. Place charcoal filter over the inlet.
- B. Connect communication cable and begin "Logall" file.  
     Record datafile name T05160.DAT  
     (Attach copy of data with test records)
- C. Turn horn volume to full (clockwise)
- D. Connect power and begin stopwatch.
- E. Verify startup sequence.

	Pass	Fail	
Display shows M43-APD	<u>✓</u>	<u>      </u>	
Display shows the Software Version	<u>✓</u>	<u>      </u>	
Display shows LED TEST followed by test patterns	<u>✓</u>	<u>      </u>	
Display shows HORNTTEST and horn beeps twice	<u>✓</u>	<u>      </u>	
Display shows SELFTEST	<u>✓</u>	<u>      </u>	
Display shows STANDBY and backflush begins	<u>✓</u>	<u>      </u>	
Display shows READY within 30 minutes after startup	<u>✓</u>	<u>      </u>	<u>8:51:13</u>
Record Time <u>2:38</u>			<u>8:49:04</u>
Display goes blank approx. 15 seconds after READY	<u>✓</u>	<u>      </u>	<u>2:09</u>

Tested by:       Date 8-12-98

Purpose of test:		Test Location:	Date:	Operator:			
Hout. Evaluation		ERDFC 350	8-12-98	HWT			
Det#: 980206 -		SWVer#: 5.028-1			Temp: -30 °C		
DataFile#	Type	Time	Conc(mg)	%Rh	Alarm time	Alarm class/id/conc	Chaling down time
	dat/sig						
T04160	DAT	8:40					
T05160	DAT	8:50					
T04161	DAT	9:11					
		9:12				BLS MED NRVLOW	2 -
		9:15				NRVLOW	2 -
T05161	DAT	9:18				<del>BLS MED NRVLOW</del>	
		9:19				BLS MED NRVLOW	2 -
		9:22				NRVLOW	2 -
T04162	DAT	9:58					
			.114	0	16	NRVLOW	16 25
T05162	DAT	10:01					
			.114	0	7	NRVLOW	7 25
T04163	SIG	10:07					
		10:08					
			.114	0	12	NRVLOW	12 33
T05163	SIG	10:09					
		10:10					
			.114	0	7	NRVLOW	7 24
							25
T04164	DAT	10:12					
			.114	0	14	NRVLOW	14 25

Detectors have been  
shut down & capped off  
for 18 hours.

Confidence Tests

end

LOG1:WB1 update 11 Jun 97

# M43 Upgrade

8/12/98

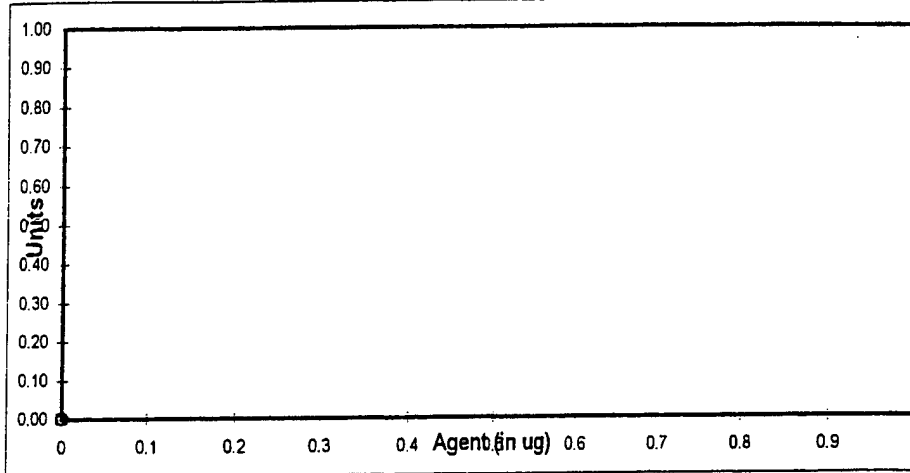
Wednesday

## Targets:

Agent = GD  
Conc. =  µg/l  
Temp = -30 °C  
RH = 0 %  
Std #1= 1.972 ng/µl  
Std #2=  ng/µl

## MINICAMS:

Flow = 50 cc/m  
Time = 20 sec.



Factor:	1	#NUM!
	(µl)	(units)
	0	0
	1	2145
	2	4189
	3	6276
	4	8064
	5	10284

Project: Provide GD, GB, GA, VX, and HD to contractor to set windows

Operators: Juan & Sonny

## NOTES:

- 1: Set agent generator for GD @ -30 C.
- 2: Run Standard curve using GD @ 1.972 ng/ul.

		LogFile
1	2145	0623
2	4189	0628
3	6276	0632
4	8064	0637
5	10284	0641

GD Generator Settings			
agent =	.03 cc/m	gen temp =	-30 C
dry air =	3.00 l/m	gen RH =	0 %
wet air =	0.00 l/m	mb temp =	20 C
agt temp =	0 C	amb RH =	0 %

- 3 Sample # 1, 20 sec @ 100 cc/min= 1053 nA = .029 mg/m3
- 4 Increase agent concentration
- 5 Sample # 2, 20 sec @ 100 cc/min= 3599 nA = .103 mg/m3
- 6 Sample # 3, 20 sec @ 100 cc/min= 3983 nA = .114 mg/m3
- 7 Begin Trail # 1 @ .114 mg/m3 for ETG detectors.
- 8 Sample # 4, 20 sec @ 100 cc/min= 4428 nA = .127 mg/m3
- 9 Lower agent flow: 

agent =	.08 cc/m
---------	----------
- 10 Begin Trail # 1 for MSS & Intellitec.
- 11 Sample # 5, 20 sec @ 100 cc/min= 4493 nA = .129 mg/m3
- 12 Sample # 6, 20 sec @ 100 cc/min= 9991 nA = .288 mg/m3
- 13 Set agent generator for GB @ -30C.
- 14

1	841
2	1767
3	2697
4	3526
5	4367

- 15 Sample #7, 20 sec @ 100 cc/min= 5857 nA = .160 mg/m3
- 16 Test Intellitec and MSS detectors.

Log File = 0728

Log File = 0759

Log File = 0958

Log File = 1027

Log File = 1027

Log File = 1439

Operator \_\_\_\_\_

Operator \_\_\_\_\_



### Startup Test Checklist and Test Data Sheet

Detector S/N 980206-04      Date: 8/13/98  
 Software Ver. V1502B      Time: 8:25  
 Location: ERDEC - Bldg 3510      +520C

#### 1. Initial Power On

- A. Uncap the air inlet and air exhaust. Place charcoal filter over the inlet.
- B. Connect communication cable and begin "Logall" file.  
     Record datafile name T0416S.DAT  
     (Attach copy of data with test records)
- C. Turn horn volume to full (clockwise)
- D. Connect power and begin stopwatch.
- E. Verify startup sequence.

	Pass	Fail
Display shows M43-APD	<u>✓</u>	<u>      </u>
Display shows the Software Version	<u>✓</u>	<u>      </u>
Display shows LED TEST followed by test patterns	<u>✓</u>	<u>      </u>
Display shows HORNTTEST and horn beeps twice	<u>✓</u>	<u>      </u>
Display shows SELFTEST	<u>✓</u>	<u>      </u>
Display shows STANDBY and backflush begins	<u>✓</u>	<u>      </u>
Display shows READY within 30 minutes after startup	<u>✓</u>	<u>      </u>
Record Time <u>5:40</u>		
Display goes blank approx. 15 seconds after READY	<u>✓</u>	<u>      </u>

Tested by: G. Lozer      Date: 8/13/98

### Startup Test Checklist and Test Data Sheet

Detector S/N 980206-05

Date: 8/12/98

Software Ver. M502B

Time: 8:35 8:52

Location: ER DEC - BLK 7510

+52°C

#### 1. Initial Power On

- A. Uncap the air inlet and air exhaust. Place charcoal filter over the inlet.
- B. Connect communication cable and begin "Logall" file.  
Record datafile name T0516S.DAT  
(Attach copy of data with test records)
- C. Turn horn volume to full (clockwise)
- D. Connect power and begin stopwatch.
- E. Verify startup sequence.

	Pass	Fail
Display shows M43-APD	<u>✓</u>	<u>      </u>
Display shows the Software Version	<u>✓</u>	<u>      </u>
Display shows LED TEST followed by test patterns	<u>✓</u>	<u>      </u>
Display shows HORNTTEST and horn beeps twice	<u>✓</u>	<u>      </u>
Display shows SELFTEST	<u>✓</u>	<u>      </u>
Display shows STANDBY and backflush begins	<u>✓</u>	<u>      </u>
Display shows READY within 30 minutes after startup	<u>✓</u>	<u>      </u>
Record Time <u>3:50</u>		
Display goes blank approx. 15 seconds after READY	<u>✓</u>	<u>      </u>

Tested by: G. Loz

Date 8/12/98  
8:52

Purpose of test:		Test Location:		Date:		Operator:							
Set-up +52°C		ERDEC		8/17/98		Lottu							
Det#:		SWver#:		SW2B		Temp:						Charging +52°C	
DataFile#	Type	Time	Sample	Conc(mg)	%Rh	Alarm time	Alarm class/id/conc	Chaling time	Clean down time	Comment			
	dat/sig												
T04165	DA7	8:24	Start-up							+52°C			
		8:30	H Cont Sample				None	3					
		8:37	A				None	5					
		8:38	A				None	10					
		8:39	G-cont Sample				None Low						
T04166	SLR		1) Chalk Air										
			2) Chalk Air										
			3) H Cont										
			4) G Sample				None Low	2		Low Cont - Re-Xmit			
			5)				None Low	2					
T05165	OAT	8:52	Start-up							Read 3:50 (8:55:50 - 8:52)			
		8:58	H-cont Sample				None	3					
		8:59	H-cont Sample				None	10					
		9:01	G-cont				None	2					
		9:02	G-cont				None	5					
		9:03	G-cont				None Low	10					
T05166	SLR		1) Chalk Air				None	10					
LOG:WB1 update 11 Jun 97													

None Low

Purpose of test		Test Location:		Date:		Operator:							
GB/GD - 1522		ERDEC		8/13/98		L 0205							
Det#: 98020604		SWer#: 5028											
DataFile#	Type	Time	Sample	Conc(mg)	%Rh	Alarm time	Alarm class/id/conc	Chalng time	Clean down time	Comment			
704167	DAT	10:30	Clean Air	1522									
		10:42	GB	0.121	29%	20	NRV Low	20	20				
		10:50	GB	0.125		19	NRV Low	19	20	11:01 Gfence 0.125			
704169	DAT	11:05:30	GB	0.125		20	NRV Low	20	20				
		11:10:30	GB	0.125		16	NRV Low	16	20				
704170	DAT	13:44	Clean Air										
		13:46	GD	0.126		1:20	NRV Low	1:20	20				
704171	SIL	14:00	GD	0.129		7	NRV Low	7	20				
704172	DAT	14:02											
		14:24	GD	0.118		—	—	2:36	—				
704173	DAT	14:34	air										
		14:35:28	GD	0.118		14	NRV Low	14	23				
end													

Purpose of test:		Test Location:		Date:	Operator:							
G-8 / G-9		ERDC		8/13/95	L. O. Z. J.							
Det#: 980 20605		SWver#:			Temp:							
DataFile#	Type	Time	Sample	Conc(mg)	%Rh	Alarm time	Alarm class/id/conc	Chalng time	Clean down time	Comment		
	dat/sig											
T05167	DAT	10:44	Clean Air	+52%								
		10:45	G-B	0.121	29%	21	NRV Low	21	21			
T05168	SIL	10:52	G-B	0.125		20	NRV Low	20	23	11:01 G-B Cn 0.125		
T05169	DAT	11:06	Clean Air									
		11:08	G-B	0.125		20	NRV Low	20	20			
		11:12:28	G-B	0.125		19	NRV Low	19	20			
T05170	DAT	13:48	Clean Air									
		13:50	G-D	0.126		8	NRV Low	8	20			
		14:02	G-D	0.129		9	NRV Low	9	21			
T05171	SIL	14:27	Clean Air									
T05172	DAT	14:28	G-D	0.118		8	NRV Low	8	20			
T05173	DAT	14:36	Air									
		14:37:39	G-D	0.118		8	NRV Low	8	21	(on wing detector)		
end												



### Startup Test Checklist and Test Data Sheet

Detector S/N 980206-4

Date: 8-14-98

Software Ver. 5.02B-1

Time: 08:26

Location: ERDEC E3510

TEMP +52°C FOLLOWING  
17-HR SHUTDOWN

#### 1. Initial Power On

- A. Uncap the air inlet and air exhaust. Place charcoal filter over the inlet.
- B. Connect communication cable and begin "Logall" file.  
Record datafile name T04174.DAT  
(Attach copy of data with test records)
- C. Turn horn volume to full (clockwise)
- D. Connect power and begin stopwatch.
- E. Verify startup sequence.

	Pass	Fail
Display shows M43-APD	<u>✓</u>	<u>      </u>
Display shows the Software Version	<u>✓</u>	<u>      </u>
Display shows LED TEST followed by test patterns	<u>✓</u>	<u>      </u>
Display shows HORNTTEST and horn beeps twice	<u>✓</u>	<u>      </u>
Display shows SELFTEST	<u>✓</u>	<u>      </u>
Display shows STANDBY and backflush begins	<u>✓</u>	<u>      </u>
Display shows READY within 30 minutes after startup	<u>✓</u>	<u>      </u>
Record Time <u>2:52</u>		
Display goes blank approx. 15 seconds after READY	<u>✓</u>	<u>      </u>

Tested by: [Signature]

Date

8/14/98

# Startup Test Checklist and Test Data Sheet

Detector S/N 980206-5 Date: 8-14-98  
 Software Ver. 5.02B-1 Time: 08:34  
 Location: ERDEC E3510

## 1. Initial Power On

- A. Uncap the air inlet and air exhaust. Place charcoal filter over the inlet.
- B. Connect communication cable and begin "Logall" file.  
 Record datafile name T05174.DAT  
 (Attach copy of data with test records)
- C. Turn horn volume to full (clockwise)
- D. Connect power and begin stopwatch.
- E. Verify startup sequence.

	Pass	Fail
Display shows M43-APD	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows the Software Version	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows LED TEST followed by test patterns	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows HORNTTEST and horn beeps twice	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows SELFTEST	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows STANDBY and backflush begins	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Display shows READY within 30 minutes after startup	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Record Time <u>3:58</u>		
Display goes blank approx. 15 seconds after READY	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Tested by: LT Weaver

Date 8/14/98



Purpose of test:		Test Location:	Date:	Operator:				
Hort. Evaluation		ERDEC 3510	8-14-98	HJW				CHAMBER HUMIDITY APPROX
Det#: #5 & #4		SWver#: 5.02B-1				Temp: +52 °C		
DataFile#	Type	Time	Sample	Conc(mg)	%Rh	Alarm time	Alarm class/id/conc time	Cleaning down time
T04174	DAT	0826	STARTUP					
T04175	SIG	0830	C-AIR					4 MIN. AFTER STARTUP
T05174	DAT	0834	STARTUP					
T05175	SIG	0840	C-AIR					6 MIN. AFTER STARTUP
T04176	DAT	0846	C-AIR					<del>CORR. TESTS</del>
		0850	C-AIR					
T05176	DAT	0859	C-AIR					
		09022	B-AIR					Auto CAL
T04177	DAT	9:31:40	H-Cor F			No Alarm	2	
		9:32:18	H-Cor F			No Alarm	5	
		9:33:30	G-Cor F			No Alarm	1	
						No Alarm	2	
T05177	DAT	9:36:33	H-Cor F			No Alarm	5	
						3	5 BL > LOW	3
						5	NRV LOW	2
		9:37:23	G-Cor F					
end		LOG1:WB1 update 11 Jun 97						

end  
LOG1.WB1 update 11 Jun 97

**8/14/98**

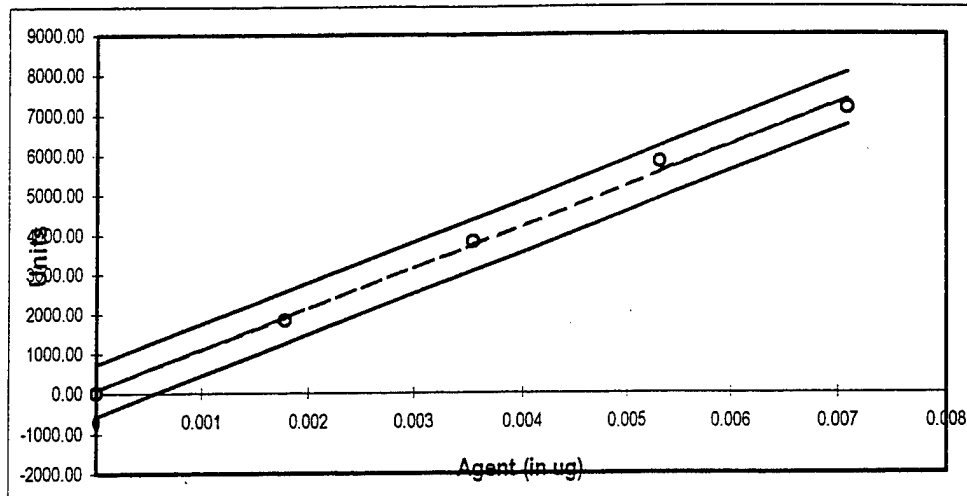
## Friday

**Targets:**

Agent =	VX	
Conc. =		µg/l
Temp =	52	°C
RH =	25	%
Std #1=	3.5468	ng/µl
Std #2=		ng/µl

## MINICAMS:

Flow =	100	cc/m
Time =	40	sec.



Factor:	1.1	0.0013
	( $\mu$ l)	(units)
	0	0
	0.5	927
	1	1806
	1.5	2650
	2	3195
0.008		

**Project: Provide GD, GB, GA, VX, and HD to contractor to set windows**

**Operators: Terri, Juan, Sonny & Kwok**

**NOTES:**

- 1: Set agent generator for VX @ 52C and 25 % RH.
- 2: Run standard curve with VX @ 3.5468 ng/ul.

		Log file
0.5	927	815
1	1806	822
1.5	2650	829
2	3195	835

- 3 Sample # 1, 40 sec @ 100 cc/min = 1056 = .030 ug/l ???  
4 Sample # 2, 40 sec @ 100 cc/min = 1817 = .055 ug/l log = 0955  
5 Testing detectors  
6 Sample # 3, 40 sec @ 100 cc/min = 1833 = .055 ug/l log = 1115

VX Generator Settings			
agent =	110 cc/m	gen temp =	52.0 C
dry air =	2.10 l/m	gen RH =	26 %
wet air =	1.00 l/m	mb temp =	20 C
agt temp =	35 C	amb RH =	82 %

Operator \_\_\_\_\_

Operator\_\_\_\_\_

# Startup Test Checklist and Test Data Sheet

Detector S/N 980206-4 Date: 8-17-98

Software Ver. 5.02B-1 Time: 13:05

Location: ERDEC E3510 TEMP: 0 °C @ STARTUP.

POWER OFF @ 8-14 11:30 + 52 °C  
STORED FOR 3 DAYS AT +25 °C  
FOLLOWED BY 5.5 HR COLD SOAK

## 1. Initial Power On

- Uncap the air inlet and air exhaust. Place charcoal filter over the inlet.
- Connect communication cable and begin "Logall" file.  
Record datafile name T04181.DAT  
(Attach copy of data with test records)
- Turn horn volume to full (clockwise)
- Connect power and begin stopwatch.
- Verify startup sequence.

	Pass	Fail
Display shows M43-APD	<u>✓</u>	<u>      </u>
Display shows the Software Version	<u>✓</u>	<u>      </u>
Display shows LED TEST followed by test patterns	<u>✓</u>	<u>      </u>
Display shows HORNTTEST and horn beeps twice	<u>✓</u>	<u>      </u>
Display shows SELFTEST	<u>✓</u>	<u>      </u>
Display shows STANDBY and backflush begins	<u>✓</u>	<u>      </u>
Display shows READY within 30 minutes after startup	<u>✓</u>	<u>      </u>
Record Time <u>2:50</u>		
Display goes blank approx. 15 seconds after READY	<u>✓</u>	<u>      </u>

Tested by: G. Loza

Date: 8/17/98

# Startup Test Checklist and Test Data Sheet

Detector S/N 980206-5

Date: 8-17-98

Software Ver. 5.02B-1

Time: 10:10

Location: ERDEL E3510

TEMP: 0 °C @ STARTUP

POWER OFF 8-14 11:30 + 52 °C  
STORED FOR 3 DAYS AT +25 °C  
FOLLOWED BY 5.5 HR COLD SOAK.

## 1. Initial Power On

- A. Uncap the air inlet and air exhaust. Place charcoal filter over the inlet.
- B. Connect communication cable and begin "Logall" file.  
Record datafile name T05181.DAT  
(Attach copy of data with test records)
- C. Turn horn volume to full (clockwise)
- D. Connect power and begin stopwatch.
- E. Verify startup sequence.

	Pass	Fail
Display shows M43-APD	<u>✓</u>	<u>      </u>
Display shows the Software Version	<u>✓</u>	<u>      </u>
Display shows LED TEST followed by test patterns	<u>✓</u>	<u>      </u>
Display shows HORNTTEST and horn beeps twice	<u>✓</u>	<u>      </u>
Display shows SELFTEST	<u>✓</u>	<u>      </u>
Display shows STANDBY and backflush begins	<u>✓</u>	<u>      </u>
Display shows READY within 30 minutes after startup	<u>✓</u>	<u>      </u>
Record Time <u>3:06</u>		
Display goes blank approx. 15 seconds after READY	<u>✓</u>	<u>      </u>

Tested by: G. Lozw

Date 8/17/98

# Data Entry Form

[illegible]

end  
LOGT:WB1 update 11 Jun 97

end  
10G1.WR1 update 11 Jun 97



S/N 3043

08/17/98

16:21

STATION 1

61

VX(FPD)

TWAG 0.00

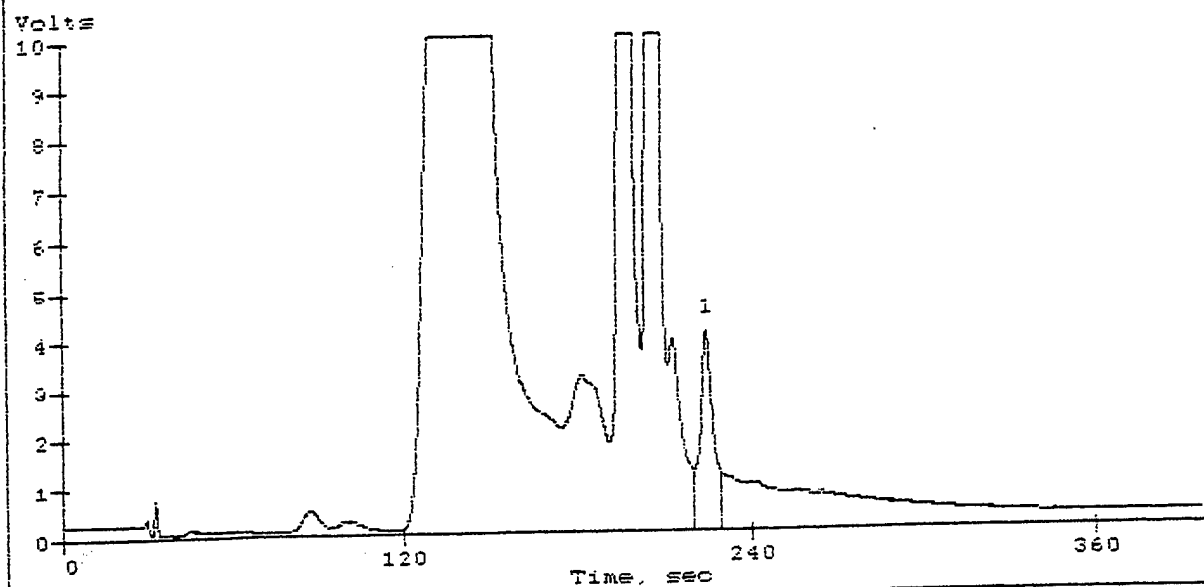
PEAK # 1

HEIGHT 720

R.TIME 224.7

WIDTH 3.4

H = Help

Recorder 1. (1.0 V = 250 nA)  
FPD Electrometer SignalOldest : 05/12/98 15:27  
Newest : 08/17/98 16:27  
Current : 08/17/98 16:21

Monitor Serial Number 3043

Date 08/17/98

Sampling Station 1

Time VX

TWAG

Purpose of test:		Test Location:	Date:	Operator:					
Host evaluation		ERDEC E3510	8-18-98	MEW					
Det#: 980206 - #4 #5		SWVer#: 5.02B-1			Temp: 0°C				
DataFile#	Type	Time	Conc(mg)	%Rh	Alarm time	Alarm class/id/conc	Chalng time	Clean down time	Comment
	dat/sig								
T04186	DAT	0835		71					Detectors have been running overnight in environmental chamber @ 0°C. Ambient <sup>71</sup> chamber humidity is 63%
T04187	SIG	0838		71					
T05186	DAT	0839		71					
T05187	SIG	0841		71					
T04188	DAT	0844		71	-	BLS MED	2	-	
		0845		71	-	NRV LOW	2	-	
T05188	DAT	0848		71	-	BLS MED	2	-	
		0852		71	-	NRV LOW	2	-	
T04189	DAT	0927		0%					
		0928	0.09 <del>0.044</del>	0	1:27	NRV LOW	1:27	2.2	<del>CONCENTRATION UNKNOWN</del>
T05189	DAT	1004		-					
		1005	0.09	0	0:37	NRV LOW	0:37	0:23	
T04190	SIG	10:25	0.09	0	1:23	NRV LOW	1:38	0:23	AUTOCAL @ t = 1 MIN INTO CHALLENGE
T05190	SIG	10:54	0.07	0	0:48	NRV LOW	0:48	0:22	
T04191	DAT	11:10							AUTOCAL - Pos Rx <sup>+</sup> SHIFTS WHEN
		11:10:43	0.07	0	0:49	NRV LOW	0:49	0:23	CONDITIONED AIR IS PUT ON
T05191	DAT	11:31		-					
		11:32	0.07	0	0:14	NRV LOW	0:14	0:28	

**APPENDIX C. GOVERNMENT EVALUATION TEST DATA:  
INTERFERENCES**

Blank

Test Location: M-FIELD

Interference Material: UNLEADED GAS EXHAUST

Date: 8-31-98

Operator: GWJ / GL

Temperature: 90°F

Weather: 55RH 6 MPH

Det S/N  
980206-4

S/W Ver  
5.02B-1

Det S/N  
980206-5

S/W Ver  
5.02B-1

Pre-test

H

G

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	BLS MED	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	NRV HI	

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	BLS LOW	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	NRV MED	

Trial No.
1
Time
1356

Distance	10'	Chall. Time	2:00
Alarm	Response	Clear Time	
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Distance	10'	Chall. Time	2:00
Alarm	Response	Clear Time	
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Comments

T04202.DAT

T05202.DAT

Trial No.
2
Time
1403

Distance			10'	Chall. Time	2:00
Alarm	Response			Clear Time	
Yes <input type="checkbox"/>					
No <input checked="" type="checkbox"/>					

Distance			10'	Chall. Time	2:00
Alarm	Response			Clear Time	
Yes <input type="checkbox"/>					
No <input checked="" type="checkbox"/>					

Comments

Trial No.
3
Time
1407

Distance	10'	Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Distance	10'	Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Comments

Post-test

H

G

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

SEE PRE-TEST DIESEL EXHAUST

Test Location: M-FIELD

Interference Material: DIESEL EXHAUST

Date: 8-31-98

Operator: GW / GL

Temperature: 90 F

Weather: 2-5 MPH 50% RH

Det S/N  
980206-4

SW Ver  
5.02B-1  
980206-5

Det S/N  
980206-4

SW Ver  
5.02B-1

Pre-test

H

G

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>BLS LOW</u>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV LOW</u>	

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>BLS LOW</u>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV HI</u>	

Trial No.

1

Time

2:41

Distance			10'	Chall. Time		2'00"
Alarm		Response		Clear Time		
Yes	<input type="checkbox"/>					
No	<input checked="" type="checkbox"/>					

Distance	10'	Chall. Time	2:00
Alarm	Response	Clear Time	
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Comments

T04204.DAT

T05204.DAT

Trial No.

2

Time

2:55

Distance	10'	Chall. Time	2:00
Alarm	Response	Clear Time	
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Distance	10'	Chall. Time	2:00
Alarm	Response	Clear Time	
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Comments

Trial No.

3

Time

3:01

Distance	10'	Chall. Time	2:00
Alarm	Response	Clear Time	
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Distance	10'	Chall. Time	2:00
Alarm	Response	Clear Time	
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Comments

T04205.SIC

T05205.SIC

Post-test

H

G

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

SEE PRETEST - GAS VAPOR

Test Location: ERDEC M-FIELD

Interference Material: GAS VAPOR

Date: 8-31-98

Operator: GW/KL

Temperature: +93 F

Weather: 46% 5 MPH

Det S/N  
980206-4

SW Ver  
5.02B-1

Det S/N  
980206-5

SW Ver  
5.02B-1

Pre-test

H

G

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>BLS LOW</u>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV HI</u>	

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>BLS LOW</u>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV MED</u>	

Trial No.

1

Time

3:25

Distance		5'	Chall. Time	2'00"
Alarm		Response		Clear Time
Yes <input type="checkbox"/>				
No <input checked="" type="checkbox"/>				

Comments

T04206.DAT

Distance 5' Chall. Time 2'00"

Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

T05206.DAT

Trial No.

2

Time

3:31

Distance		5'	Chall. Time	2'00"
Alarm	Response		Clear Time	
Yes <input type="checkbox"/>				
No <input checked="" type="checkbox"/>				

Comments

Distance 5' Chall. Time 2'00"

Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Trial No.

3

Time

3:39

Distance		5'	Chall. Time	2' 0"
Alarm		Response		Clear Time
Yes <input type="checkbox"/>				
No <input checked="" type="checkbox"/>				

Comments

T04207.SIG

Distance 5' Chall. Time 2'00"

Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

T05207.SIG

Post-test

H

G

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

SEE PRE-TEST BURNING GAS

Test Location:

M-FIELD

Interference Material:

BURNING GAS

Date:

8-31-98

Operator:

GW/GL

Temperature:

+ 93

Weather:

Det S/N

980206-4

S/W Ver

5.02B-1

Det S/N

980206-5  
5.02B-1

S/W Ver

5.02B-1

Pre-test

H

G

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>BLS LOW</u>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV MED</u>	

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>BLS LOW</u>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV HI</u>	

Trial No.

1

Time

3:58

Comments

Distance 15'		Chall. Time 3'00"	
Alarm	Response	Clear Time	
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

T04208.DAT

Distance		15'	Chall. Time	3'00"
Alarm		Response		Clear Time
Yes	<input type="checkbox"/>			
No	<input checked="" type="checkbox"/>			

T05208.DAT

Trial No.

2

Time

4:10

Comments

Distance	15'	Chall. Time	3:00
Alarm	Response	Clear Time	
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Distance		15'	Chall. Time	3:00
Alarm	Response		Clear Time	
Yes <input type="checkbox"/>				
No <input checked="" type="checkbox"/>				

Trial No.

3

Time

4:21

Comments

Distance 15		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

T04209.SIG

Distance 15'		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

T05209.SIG

Post-test

H

G

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

SEE PRE-TEST DIESEL VAPOR



Test Location: M-FIELD  
Date: 8-31-98  
Temperature: +93 F

Interference Material: DIESEL VAPOR  
Operator: GW / GL  
Weather: 48% 5 MPH

Det S/N  
980206-4

SW Ver  
5.02B-1

Det S/N  
980206-5

SW Ver  
5.02B-1

Pre-test

H

G

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>BLS LOW</u>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV LOW</u>	

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>BLS LOW</u>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV LOW</u>	

Trial No.
<u>1</u>
Time
<u>16:50</u>

Distance	5'	Chall. Time	2:00
Alarm	Response	Clear Time	
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Distance	5'	Chall. Time	2:00
Alarm	Response	Clear Time	
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Comments

T04210.DAT

T05210.DAT

Trial No.
<u>2</u>
Time
<u>16:56</u>

Distance		5'	Chall. Time	2:00
Alarm	Response		Clear Time	
Yes <input type="checkbox"/>				
No <input checked="" type="checkbox"/>				

Distance	5'	Chall. Time	2:00
Alarm	Response	Clear Time	
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Comments

Trial No.
<u>3</u>
Time
<u>17:02</u>

Distance		5'	Chall. Time
Alarm	Response		Clear Time
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Distance	5'	Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Comments

T04211.SIV

T05211.SIV

Post-test

H

G

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

Test Location: M-Field  
Date: 8-31-98  
Temperature: 47.3°F

Interference Material: Diesel Running  
Operator: GL  
Weather: 48%RH 5 mph

Det S/N  
980206-04

SW Ver  
S.02B-1

Det S/N  
980206-05

SW Ver  
S.02R-1

Pre-test

H

G

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>BL Low</u>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV Low</u>	

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>BL Low</u>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV Low</u>	

Trial No.  
1  
Time  
17:13

Distance	15ft	Chall. Time	2:00
Alarm	Response	Clear Time	
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Distance	15ft	Chall. Time	2:00
Alarm	Response	Clear Time	
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Comments

T04212.DAT

T05212.DAT

Trial No.  
2  
Time  
17:21

Distance	15 ft	Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Distance	15ft	Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Comments

Trial No.  
3  
Time  
17:26

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Comments

T04213.S16

T05213.S16

Post-test

H

G

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

Test Location: M-Field  
Date: 8-31-98  
Temperature: +93°F

Interference Material: Kerosene Vapor  
Operator: G.L.  
Weather: 48% RH 5 MPH

Det S/N  
980206-04

SW Ver  
5025-1

Det S/N  
980206-05

SW Ver  
5025-1

Pre-test

H

G

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>BLS Low</u>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV Low</u>	

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>BLS Low</u>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV Hi</u>	

Trial No.
<u>1</u>
Time
<u>17:39</u>

Distance	5 ft	Chall. Time	2:00
Alarm	Response	Clear Time	
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Distance	5 ft	Chall. Time	2:00
Alarm	Response	Clear Time	
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Comments

T04214.0AT

T05214.DAT

Trial No.
<u>2</u>
Time
<u>17:44</u>

Distance	5 ft	Chall. Time	2:00
Alarm	Response	Clear Time	
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Distance	Sfr	Chall. Time	2:00
Alarm	Response	Clear Time	
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Comments

Trial No.
<u>3</u>
Time
<u>17:48</u>

Distance	5 ft	Chall. Time	2:00
Alarm	Response	Clear Time	
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Distance	5 ft	Chall. Time	2:00
Alarm	Response	Clear Time	
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Comments

T04215.SIL

T05215.SIL

Post-test

H

G

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

Test Location: M-Field  
Date: 8-71-98  
Temperature: 90°F

Interference Material: Kerosene Running  
Operator: LOTO  
Weather: \_\_\_\_\_

Det S/N  
980206-04

S/W Ver  
S02B-1

Det S/N  
980206-05

S/W Ver  
S02B-1

Pre-test

H

G

Alarm		Response	Clear Time
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	BLS LOW	
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	NRV MED	

Alarm		Response	Clear Time
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	BLS LOW	
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	NRV MED	

Trial No.
<u>1</u>
Time
<u>18:02</u>

Distance <u>15 ft</u>		Chall. Time <u>2:00</u>	
Alarm	Response		Clear Time
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Distance <u>15 ft</u>		Chall. Time <u>2:00</u>	
Alarm	Response		Clear Time
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Comments

T04 216 DAT

T05 216 DAT

Trial No.
<u>2</u>
Time
<u>18:07</u>

18:09  
Comments

Distance <u>15 ft</u>		Chall. Time <u>2:00</u>	
Alarm	Response		Clear Time
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Distance <u>15 ft</u>		Chall. Time <u>2:00</u>	
Alarm	Response		Clear Time
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Trial No.
<u>3</u>
Time
<u>18:14</u>

Comments

Distance <u>15 ft</u>		Chall. Time <u>2:00</u>	
Alarm	Response		Clear Time
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Distance <u>15 ft</u>		Chall. Time <u>2:00</u>	
Alarm	Response		Clear Time
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

T04 217 SIF

T05 217 SIF

put on A/C → D/C power over light

Post-test

H

G

Alarm		Response	Clear Time
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	BLS LOW	
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	NRV MED	

Alarm		Response	Clear Time
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	BLS MED	
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	NRV Hi	

18:20

T04 218 DAT

T05 218 DAT

Test Location: MFell

Date: 9/1/98

Temperature: 73°F

Interference Material: JPE Vapor

Operator: L O ZOS

Weather: 68% RH 7 mph

Det S/N  
980206-04

SW Ver  
15020-1

Det S/N  
980206-05

SW Ver  
15020-1

Pre-test

H

G

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	BLS MED	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	NRV MED	

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	BLS MED	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	NRV LOW	

Trial No.
<u>1</u>
Time
<u>8:20</u>

Distance	5 ft	Chall. Time	2:00
Alarm	Response	Clear Time	
Yes <input checked="" type="checkbox"/>	NRV Low		
No <input type="checkbox"/>			

Distance	5 ft	Chall. Time	2:00
Alarm	Response	Clear Time	
Yes <input checked="" type="checkbox"/>	NRV Low		
No <input type="checkbox"/>			

Comments

704 219. DAT

705 219. DAT

Trial No.
<u>2</u>
Time
<u>8:25</u>

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/>	NRV LOW	
No <input type="checkbox"/>		

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Comments

Trial No.
<u>3</u>
Time
<u>8:36</u>

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Comments

704 220. SIL

705 220. SIL

Post-test

H

G

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

Test Location: M-Field  
Date: 9/1/98  
Temperature: 74°F

Interference Material: JPI, Kurnik  
Operator: Lozos  
Weather: 65% RH

Det S/N  
980206-04

SW Ver  
MS02D-1

Det S/N  
98206-05

SW Ver  
MS02D-1

Pre-test

H

G

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>BL Low</u>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV MED</u>	

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>BL MED</u>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV Low</u>	

Trial No.
<u>1</u>
Time
<u>8:43</u>

Distance	15 ft	Chall. Time	220
Alarm	Response	Clear Time	
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Distance	15 ft	Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Comments

TOY 221. DAT

TO5 221. DAT

Trial No.
<u>2</u>
Time
<u>8:56</u>
<u>8:56</u>

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Comments

Trial No.
<u>3</u>
Time
<u>9:10</u>

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Comments

TOY 222 SIL

TO5 222. SIL

Post-test

H

G

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

Test Location: MECL  
Date: 9/1/98  
Temperature: \_\_\_\_\_

Interference Material: Cardboard burning  
Operator: LOZOS  
Weather: \_\_\_\_\_

Det S/N  
980206-04

SW Ver  
M502D-1

Det S/N  
980206-05

SW Ver  
M502D-1

Pre-test

H

G

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>BLS HI</u>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV MED</u>	

BLS LOW

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>BLS LOW</u>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV LOW</u>	

Trial No.
<u>1</u>
Time
<u>9:26</u>

9:26  
Comments

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

T04 223. DAT

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

T05 223. DAT

Trial No.
<u>2</u>
Time
<u>9:41</u>

Comments

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

9:44 auto cc

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Trial No.
<u>3</u>
Time
<u>9:57</u>

Comments

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

T04 224. SLG

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

T05 214. SLG

103r comm

Post-test

H

G

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

Test Location: M-Fire 11  
Date: 5/1/98  
Temperature: 78°F

Interference Material: Wood, burning  
Operator: Loew  
Weather: 59°F, 11

Det S/N  
980206-04

S/W Ver  
M502D-1

Det S/N  
980206-05

S/W Ver  
M502D-1

Pre-test

H

G

Alarm		Response	Clear Time
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	<u>BLST MEN</u>	
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	<u>NRV Low</u>	

Alarm		Response	Clear Time
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	<u>BLU MEN</u>	
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	<u>NRV Low</u> <u>MEN</u>	

Trial No.
<u>1</u>
Time
<u>10:15</u>

Distance		Chall. Time
<u>35 ft</u>		
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Distance		Chall. Time
<u>35 ft</u>		
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Comments

704 215. DAT

705 215. DAT

Trial No.
<u>2</u>
Time
<u>10:20</u>

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Comments

Trial No.
<u>3</u>
Time
<u>10:24</u>

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Comments

704 216. SIL

705 216. SIL

Post-test

H

G

Alarm		Response	Clear Time
Yes <input type="checkbox"/>	No <input type="checkbox"/>		
Yes <input type="checkbox"/>	No <input type="checkbox"/>		

Alarm		Response	Clear Time
Yes <input type="checkbox"/>	No <input type="checkbox"/>		
Yes <input type="checkbox"/>	No <input type="checkbox"/>		



Test Location: M-Field  
Date: 9/1/98  
Temperature: \_\_\_\_\_

Interference Material: Doused fire  
Operator: Lozu  
Weather: \_\_\_\_\_

Det S/N  
980206-04

S/W Ver  
M5020-7

Det S/N  
980206-05

S/W Ver  
M5020-1

Pre-test

H

G

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	BLS MED	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	NRV H1	

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	BL MED	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	NRV MED	

Trial No.
<u>1</u>
Time
<u>10:36</u>

Distance <u>22 ft</u>		Chall. Time <u>2:00</u>
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Comments

TOY 227, DAT

10:38 Alarm C/L 10:51 Rx 10:51  
Emergency

Distance	22 ft	Chall. Time	2:00
Alarm	Response	Clear Time	
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

TOY 227, DAT

10:51 Rx 10:51 frequently

Trial No.
<u>2</u>
Time
<u>10:47</u>

Distance	22 ft	Chall. Time	2:00
Alarm	Response	Clear Time	
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Comments

10:49 Alarm C/L 10:50 Ready

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Trial No.
<u>3</u>
Time
<u>10:58</u>

Distance	22 ft	Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Comments

TOY 228, SIL

Distance		22 ft	Chall. Time
Alarm	Response		Clear Time
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

TOY 228, SIL

Post-test

H

G

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

Test Location: M - Field  
Date: 7/1/98  
Temperature: 83°F

Interference Material: Tire, Burnt  
Operator: Loz05  
Weather: 57%RH

Det S/N  
980206-04

SW Ver  
M502D-1

Det S/N  
980206-05

SW Ver  
M502D-1

11:10  
Pre-test

H

G

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	BLS Med	
Yes <input type="checkbox"/> No <input type="checkbox"/>	NRV Hi	

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	BLS MED	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	NRV LOW	

Trial No.
<u>1</u>
Time
<u>12:40p</u>

Distance	22 ft	Chall. Time	2:00
Alarm	Response	Clear Time	
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Distance	22 ft	Chall. Time	2:00
Alarm	Response	Clear Time	
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Comments

T04 229 DAT

T05 229 DAT

Trial No.
<u>2</u>
Time
<u>12:45</u>

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Comments

Trial No.
<u>3</u>
Time
<u>12:50</u>

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Comments

T04 230.51h

T05 230.51h

Lost Comm

Post-test

H

G

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

Test Location: M-Field  
Date: 9/11/98  
Temperature: 81°F

Interference Material: White Phosphorus  
Operator: Lopez  
Weather: 55% RH

Det S/N  
980206-04

S/W Ver  
M502D-1

Det S/N  
980206-05

S/W Ver  
M502D-1

Pre-test

H

G

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	BLS Mel	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	NRV MED	

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	BLS Low	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	NRV MED	

Trial No.
1
Time
13:07

Distance	50 ft	Chall. Time	2:00
Alarm	Response	Clear Time	
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Distance	50 ft	Chall. Time	2:00
Alarm	Response	Clear Time	
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Comments

T04 231. DAT

T05 231. DAT

Trial No.
2
Time
13:10

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Comments

Trial No.
3
Time
13:14

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Distance		Chall. Time	
Alarm	Response		Clear Time
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Comments

T04 232. SIC

T05 232. SIC

Post-test

H

G

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

Test Location: M-Field  
Date: 9/1/95  
Temperature: 83°F

Interference Material: Yellow Smoke  
Operator: Lozu  
Weather: \_\_\_\_\_

Det S/N  
980206-04

S/W Ver  
M5020-1

Det S/N  
980206-05

S/W Ver  
M5020-1

Pre-test

H

G

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>BLS MED</u>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV HI</u>	

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>BLS MED</u>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV MED</u>	

Trial No.  
1  
Time  
13:57

Distance		50 ft	Chall. Time
Alarm	Response	Clear Time	
Yes <input checked="" type="checkbox"/>	GB Low		
No <input type="checkbox"/>			

Distance		50 ft	Chall. Time
Alarm	Response		Clear Time
Yes <input checked="" type="checkbox"/>	G-D Low/Med		
No <input type="checkbox"/>	L Low		

Comments

T04 233. DAT  
w/ Rain/Dur filter

T05 233. DAT  
w/ Rain/Dur filter

Trial No.  
2  
Time  
13:59  
14:00  
Comments

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/>	BLS Low	
No <input type="checkbox"/>		

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/>	BLS Low	
No <input type="checkbox"/>		

Trial No.  
3  
Time  
14:15  
Comments

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/>	BL	
No <input type="checkbox"/>		

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/>	528	
No <input type="checkbox"/>		

Comments

T04 234. SIL

T05 234. SIL

Post-test

H

G

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

Test Location:

M-Field

Interference Material:

Viold Smoke

Date:

9/1/98

Operator:

L0201

Temperature:

Weather:

Det S/N

980206-04

S/W Ver

M5020-1

Det S/N

980206-05

S/W Ver

M5020-1

Pre-test

H

G

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>ISL Low</u>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV Hi</u>	

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>ISL Med</u>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV MED</u>	

Trial No.

1

Time

14:36

Distance	50 ft	Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Distance		50 ft	Chall. Time
Alarm	Response		Clear Time
Yes <input checked="" type="checkbox"/>	H Low		
No <input type="checkbox"/>			

Comments

T04235. DATT05235. DATchanged Ram/PLR filters fun br!

Trial No.

2

Time

14:43

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/>	H Low	
No <input type="checkbox"/>		

Comments

Trial No.

3

Time

14:50

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/>	ISLS	
No <input type="checkbox"/>		

Comments

T04236. S16T05236. S16

Post-test

H

G

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

Test Location: M-Field  
Date: 9/1/98  
Temperature: 86°F

Interference Material: Red Smoke  
Operator: Loren  
Weather: \_\_\_\_\_

Det S/N  
980206-04

SW Ver  
M502D-1

Det S/N  
980206-05

SW Ver  
M502D-1

Pre-test

H

G

Alarm		Response	Clear Time
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	<u>BLS Mel</u>	
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	<u>NRV H:</u>	

Alarm		Response	Clear Time
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	<u>BLS Mel</u>	
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	<u>NRV Mel</u>	

Trial No.
<u>1</u>
Time
<u>15:07</u>

Distance <u>50 ft</u>		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Distance <u>50 ft</u>		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Comments

T04237.DAT  
changed Rain/Air filter for both

Trial No.
<u>2</u>
Time
<u>15:16</u>

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Comments

lost

Trial No.
<u>3</u>
Time
<u>15:30</u>

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Comments

T04238.S16

Lost Cam

Post-test

H

G

Alarm		Response	Clear Time
Yes <input type="checkbox"/>	No <input type="checkbox"/>		
Yes <input type="checkbox"/>	No <input type="checkbox"/>		

Alarm		Response	Clear Time
Yes <input type="checkbox"/>	No <input type="checkbox"/>		
Yes <input type="checkbox"/>	No <input type="checkbox"/>		

Test Location: M-Fish  
Date: 9/1/98  
Temperature: \_\_\_\_\_

Interference Material: Green Snake  
Operator: LOZU  
Weather: \_\_\_\_\_

Det S/N  
980206-04

SW Ver  
115020-1

Det S/N  
980206-04

SW Ver  
115020-1

Pre-test

H

G

Alarm		Response	Clear Time
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	<u>BL Low</u>	
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	<u>NRV Hi</u>	

Alarm		Response	Clear Time
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	<u>BL Low</u>	
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	<u>NRV MED</u>	

Trial No.  
1  
Time  
15:50

Distance <u>50 ft</u>		Chall. Time
Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/>	<u>GB Low</u>	
No <input type="checkbox"/>		

Distance <u>50 ft</u>		Chall. Time
Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/>	<u>GB Low</u>	
No <input type="checkbox"/>		

Comments T04 239. DAT

T05 235. DAT

Trial No.  
2  
Time  
15:51

Distance <u>10 ft</u>		Chall. Time
Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/>	<u>GB Low</u>	
No <input type="checkbox"/>		

Distance <u>10 ft</u>		Chall. Time
Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/>	<u>GB Low</u>	
No <input type="checkbox"/>		

Comments \_\_\_\_\_

Trial No.  
3  
Time  
16:13

Distance <u>2-5 ft</u>		Chall. Time
Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/>	<u>NRV</u>	
No <input type="checkbox"/>		

Distance <u>2-5 ft</u>		Chall. Time
Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/>	<u>NRV</u>	
No <input type="checkbox"/>		

Comments T04 240.5/L

T05 240.5/L

Post-test

H

G

Alarm		Response	Clear Time
Yes <input type="checkbox"/>	No <input type="checkbox"/>		
Yes <input type="checkbox"/>	No <input type="checkbox"/>		

Alarm		Response	Clear Time
Yes <input type="checkbox"/>	No <input type="checkbox"/>		
Yes <input type="checkbox"/>	No <input type="checkbox"/>		

Test Location: M-Field  
Date: 9/1/98  
Temperature: 87°F

Interference Material: HTH  
Operator: L0201  
Weather: \_\_\_\_\_

Det S/N  
980206-04

SW Ver  
M5020-1

Det S/N  
980206-05

SW Ver  
M5020-1

Pre-test

H

G

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>RLS Low</u>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV Hi</u>	

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>RLS Low</u>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>(NRV Mid)</u>	

Trial No.
<u>1</u>
Time
<u>16:52</u>

Distance	3 ft	Chall. Time	2:00
Alarm	Response	Clear Time	
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Distance	3 ft	Chall. Time	2:00
Alarm	Response	Clear Time	
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Comments

T04241 DAT (w/fer)  
w/o Rain/Dust f. len

T05241 DAT (w/fer)  
w/o Rain/Dust f. len

Trial No.
<u>2</u>
Time
<u>17:21</u>

Distance	10 ft	Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Distance     10 ft		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Comments

Trial No.
<u>3</u>
Time

Distance		Chall. Time	
Alarm	Response	Clear Time	
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Comments

T04242. S16

T05242. S16

pvt on D/C power Rm overnight

Post-test

H

G

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>RLS Low</u>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV Hi</u>	

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>RLS Low</u>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV Mid</u>	

T04243. DAT

T05243. DAT



Test Location: H-Field

Date: 9/2/98

Temperature: 76°F

Interference Material: B/pc 6

Operator: LOZU

Weather: 86% RH 6 MPH

AFTN Lightning Storm

Det S/N  
980206-04

S/W Ver  
M502D-1

Det S/N  
980206-05

S/W Ver  
M502D-1

27°C

26°C

10:40am

Pre-test

H

G

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>BLS MEI</u>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV I/i</u>	

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>BLS LOW</u>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV MEI</u>	

Trial No.

1

Time

10:54

Distance	10 ft	Chall. Time	2:00
Alarm	Response	Clear Time	
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Distance	10 ft	Chall. Time	2:00
Alarm	Response	Clear Time	
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Comments

TOY 244. DAT

TO5244. DAT

Trial No.

2

Time

11:00

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Comments

Trial No.

3

Time

11:04

Distance		Chall. Time	
Alarm	Response	Clear Time	
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Comments

TOY 245.516

TO5245.516

Post-test

H

G

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

Test Location: M- Field

Date: 9/2/98

Temperature: 77°F

Interference Material: STB

Operator: L0201

Weather: \_\_\_\_\_

Det S/N  
980206-04

SW Ver  
M502D7

Det S/N  
980206-05

SW Ver  
M502D7

Pre-test

H

G

Alarm		Response	Clear Time
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	BLS Hi	
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	NRV MED	

Alarm		Response	Clear Time
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	RLS MED	
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	NRV MED	

Trial No.
<u>1</u>
Time
<u>11:19</u>

Distance <u>10 ft</u>		Chall. Time <u>2:00</u>	
Alarm	Response		Clear Time
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Comments

T04246.0A7

Distance <u>10 ft</u>		Chall. Time <u>2:00</u>	
Alarm	Response		Clear Time
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

T05246.DA7

Trial No.
<u>2</u>
Time
<u>11:21</u>

Distance		Chall. Time	
Alarm	Response		Clear Time
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Comments

Distance		Chall. Time	
Alarm	Response		Clear Time
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Trial No.
<u>3</u>
Time
<u>11:28</u>

Distance		Chall. Time	
Alarm	Response		Clear Time
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Comments

T04247.S16

Distance		Chall. Time	
Alarm	Response		Clear Time
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

T05247.S16

Post-test

H

G

Alarm		Response	Clear Time
Yes <input type="checkbox"/>	No <input type="checkbox"/>		
Yes <input type="checkbox"/>	No <input type="checkbox"/>		

Alarm		Response	Clear Time
Yes <input type="checkbox"/>	No <input type="checkbox"/>		
Yes <input type="checkbox"/>	No <input type="checkbox"/>		

Test Location: M-Field

Interference Material: DS2

Date: 9/2/98

Operator: LOZO

Temperature: \_\_\_\_\_

Weather: \_\_\_\_\_

Det S/N  
980206-04

SW Ver  
M502D-1

Det S/N  
980206-05

SW Ver  
M502D-1

Pre-test

H

G

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>BLS MED</u>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV Hi</u>	

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>BLS MED</u>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV Low MED</u>	

Trial No.  
1  
Time  
11:43

Distance	10 ft	Chall. Time	2:00
Alarm	Response	Clear Time	
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Distance		10 ft		Chall. Time		2:00	
Alarm		Response		Clear Time			
Yes <input type="checkbox"/>							
No <input checked="" type="checkbox"/>							

Comments

TOY 248.DAT

TO5 248.DAT

Trial No.  
2  
Time  
11:48

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Comments

add fan

add fan

Trial No.  
3  
Time  
11:55

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/>	GB Low	
No <input type="checkbox"/>		

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Comments

TOY 249.SIL

Post-test

H

G

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>BLS MED</u>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV Hi</u>	

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>BLS MED</u>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV MED</u>	

TOY 250.DAT

TO5 250.DAT

Test Location:

M-Field

Date:

9/2/98

Temperature:

83°FAer-U-Watch 6EM 690 (1<sup>st</sup> Defense NF)

Interference Material:

AFFF vapor

MIL-F-2438F

Operator:

L0201

Weather:

74%RH 44/14

Det S/N

980206-04

S/W Ver

M302D-1

Det S/N

780206-05

S/W Ver

M302D-1

Pre-test

H

G

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>BLS Low</u>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV MED</u>	

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>BLS Low</u>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV MED</u>	

Trial No.

1

Time

13:26

Comments

Distance	10ft	Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Distance	10ft	Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

TOY 251. DATTOY 251. DATw/ fanw/ fan

Trial No.

2

Time

13:31

Comments

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Trial No.

3

Time

13:37

Comments

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

TOY 252. SILTOY 252. SIL

Post-test

H

G

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

Test Location:

M-Field

Interference Material:

CLP  
Cleaner Lubricant & Preservation

Operator:

LOZO

Weather:

Date:

9/2/98

Temperature:

84°F

Det S/N

980206-04

S/W Ver

M5020-1

Det S/N

980206-05

S/W Ver

Pre-test

H

G

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	BLS Low	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	NRV MED	

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	BLS Low	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	NRV MED	

Trial No.

1

Time

13:47

Distance 3 ft Chall. Time

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

Distance 3 ft Chall. Time

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

Comments

Toy 253. DAT

on clock w/ fan

Toy 253. DAT

on clock w/ fan

Trial No.

2

Time

13:52

Distance Chall. Time

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

Distance Chall. Time

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

Comments

Trial No.

3

Time

13:56

Distance Chall. Time

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

Distance Chall. Time

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

Comments

Toy 254. S16

Toy 254. S16

Post-test

H

G

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

Test Location: M-Field

Interference Material: LSA oil

Date: 9/2/98

Operator: Lozoi

Temperature: 85°F

Weather: 71% RH

Det S/N  
980206-04

SW Ver  
M502D-1

Det S/N  
980206-05

SW Ver  
M502D-1

Pre-test

H

G

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>BLS Low</u>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV Hi</u>	

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>BLS Low</u>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV MEH</u>	

Trial No.
<u>1</u>
Time
<u>14:39</u>

Distance	3 ft	Chall. Time	2:00
Alarm	Response	Clear Time	
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Distance	3 ft	Chall. Time	2:00
Alarm	Response	Clear Time	
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Comments

T04257.0A7

T05257.0A7

on clock

Trial No.
<u>2</u>
Time
<u>14:43</u>

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Distance		Chall. Time	
Alarm	Response	Clear Time	
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Comments

Trial No.
<u>3</u>
Time

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Comments

T04258.516

T05258.516

Post-test

H

G

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

Test Location: Mr Field  
Date: 9/2/98  
Temperature: 85°F

Interference Material: RAC (Rifle Declear)  
Operator: LOZOS  
Weather: 75% RH

Det S/N
---------

S/W Ver
---------

Det S/N
---------

S/W Ver
---------

Pre-test

H

G

Alarm		Response	Clear Time
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	BLS Low	
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	NRV Hi	

Alarm		Response	Clear Time
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	BLS L	
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	NRV H	

Trial No.
1
Time
14:11

Distance		Chall. Time	
Alarm		Response	Clear Time
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Distance		Chall. Time	
Alarm		Response	Clear Time
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Comments

TOY 255, DAT  
on clock 4/ f44

TOY 255, DAT

Trial No.
2
Time
14:20

Distance		Chall. Time	
Alarm		Response	Clear Time
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Distance		Chall. Time	
Alarm		Response	Clear Time
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Comments

Trial No.
3
Time
14:25

Distance		Chall. Time	
Alarm		Response	Clear Time
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Distance		Chall. Time	
Alarm		Response	Clear Time
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Comments

TOY 256, SIL

TOY 256, SIL

Post-test

H

G

Alarm		Response	Clear Time
Yes <input type="checkbox"/>	No <input type="checkbox"/>		
Yes <input type="checkbox"/>	No <input type="checkbox"/>		

Alarm		Response	Clear Time
Yes <input type="checkbox"/>	No <input type="checkbox"/>		
Yes <input type="checkbox"/>	No <input type="checkbox"/>		

Test Location:

M-field

Date:

9/2/98

Temperature:

86°F

Interference Material:

9.98 EPA Reg 7405-60-48295  
DEET Insect Repellent  
Aerosol

Operator:

LUZVS

Weather:

70°F

Det S/N

980206-04

S/W Ver

M5020-1

Det S/N

980206-05

S/W Ver

M5020-1

Pre-test

H

G

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>BLS Low</u>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV Low</u>	

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>BLS Low</u>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV MED</u>	

Trial No.

1

Time

14:09

Distance <u>3 ft</u>		Chall. Time <u>2:00</u>
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Distance <u>3 ft</u>		Chall. Time <u>2:00</u>
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Comments

T04 259. DATT05 259. DATon clock w/ fan

Trial No.

2

Time

15:04

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Comments

Trial No.

3

Time

15:10

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Comments

T04 260. SILT05 260. SIL

Post-test

H

G

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>BLS Low</u>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV Hi</u>	

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>BLS Low</u>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV MED</u>	

T04 261. DATT05 261. DAT



Test Location:

M-Field

Interference Material:

32% DEET Cream, insect repellent

Date:

9/2/98

Operator:

LOZOS

Temperature:

64°F → 69°F

Weather:

95% RH Cloudy

Det S/N

980206-04

S/W Ver

M502D-1

Det S/N

980206-05

S/W Ver

M502D-1

7:25A

Pre-test

H

G

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV MED</u>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV MED</u>	

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV MED</u>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV MED</u>	

Trial No.

1

Time

8:06

Distance 3 ft Chall. Time 2:00

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

Distance 3 ft Chall. Time 2:00

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

Comments

T04267.DATT05262.DATon cloth w/ fan

Trial No.

2

Time

8:12

Distance 3 ft Chall. Time 2:00

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

Distance 3 ft Chall. Time 2:00

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

Comments

Trial No.

8:17

Time

Distance 1 ft Chall. Time

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

Distance 1 ft Chall. Time

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

Comments

T04267.S1WT05267.S1WMouth closed

Post-test

H

G

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

Test Location:

M-F<sub>1</sub>W

Date:

9/3/98

Temperature:

73°F

Interference Material:

M56 TURBINE EXHAUST  
(JPT)

Operator:

L020J

Weather:

80% RH

Det S/N

980206-04

S/W Ver

M502D-1

Det S/N

980206-05

S/W Ver

M502D-2

Pre-test

H

G

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	BLS MED	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	NRV MED	

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	BLS MED	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	NRV MED	

Trial No.

1

Time

9:16

Distance 25 ft Chall. Time 2:00

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	VX Low	

Comments

TO 4264 DA7

alarm when turning shift off (body), return JPT @ shift off

Trial No.

2

Time

9:22

Distance Chall. Time

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	VX Low	

Comments

alarm when turning shift off (body), return JPT @ shift off

Trial No.

3

Time

9:21

Distance Chall. Time

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

Comments

TO 4265.51V

Distance Chall. Time

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

TO 5264 DA7

Post-test

H

G

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

Test Location:

M-Field

WASP/Hornet Spy

Interference Material:

Insecticide

Date:

9/3/98

Technician

Operator:

Loz05

Temperature:

77°F

Weather:

70% RH

Det S/N

980206-04

S/W Ver

M502D-1

Det S/N

980206-05

S/W Ver

M502D-1

Pre-test

H

G

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	BU Hi	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	NKV MED	

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	BU MED	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	NKV MED	

Trial No.

1

Time

9:47

Distance 3 ft Chall. Time 2:00

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

Comments

T04266.DAT

Distance 3 ft Chall. Time 2:00

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

T05266.DAT

Trial No.

2

Time

9:50

Distance 3 ft Chall. Time

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

Comments

Distance 3 ft Chall. Time

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

Trial No.

3

Time

8:54

Distance → 1 ft Chall. Time

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

Comments

T04267.SIL

Distance → 1 ft Chall. Time

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		

T05267.SIL

Post-test

H

G

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

Test Location: M-Field

Date: 9/3/98

Temperature: 79°F

Interference Material: Fog Oil Smoke

Operator: Lozos

Weather: 70% RH

Det S/N  
980206-04

S/W Ver  
MS02D-1

Det S/N  
980206-05

S/W Ver  
MS02D-1

Pre-test

H

G

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>RLS Hi</u>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV Low</u>	

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>RLS MED</u>	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>NRV MED</u>	

Trial No.
<u>1</u>
Time
<u>10:10</u>

Distance	25 ft	Chall. Time	2:00
Alarm	Response	Clear Time	
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Distance	25 ft	Chall. Time	2:00
Alarm	Response	Clear Time	
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Comments

TOY 268.DAT  
1 min Turbine warm up, 2 min Smoke

TO5 268.DAT

Trial No.
<u>2</u>
Time
<u>10:19</u>

Distance		Chall. Time	
Alarm	Response		Clear Time
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Distance	Chall. Time	
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Comments

Trial No.
<u>3</u>
Time
<u>10:27</u>

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Comments

TO4269.SIL

TO5 269.SIL

Post-test

H

G

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

Alarm	Response	Clear Time
Yes <input type="checkbox"/> No <input type="checkbox"/>		
Yes <input type="checkbox"/> No <input type="checkbox"/>		

Test Location: M Fc11  
Date: 9/3/98  
Temperature: 78°F → 82°F

Interference Material: M76 Smoke Grenade  
IR Screening  
Operator: L0208  
Weather: 77% RH → 55% RH 5 mph

Det S/N  
980206-04

S/W Ver  
M502D-1

Det S/N  
980206-05

S/W Ver  
M502D-1

Pre-test

H

G

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	BLS Low	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	(NRV MED)	

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	BLS Low	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	(NRV MED)	

Trial No.
<u>1</u>
Time
<u>12:24</u>

Distance	20 ft	Chall. Time	5m
Alarm	Response	Clear Time	
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Distance	20 ft	Chall. Time	5m
Alarm	Response	Clear Time	
Yes <input type="checkbox"/>			
No <input checked="" type="checkbox"/>			

Comments

T04270. DAT  
w/ Rain/Out Filter

T05270. DAT

Trial No.
<u>12</u>
Time
<u>12:30</u>

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Comments

Trial No.
<u>3</u>
Time

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Distance		Chall. Time
Alarm	Response	Clear Time
Yes <input type="checkbox"/>		
No <input checked="" type="checkbox"/>		

Comments

T04271. S16

T05271. S16

Post-test

H

G

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	H MED	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	(NRV MED)	

Alarm	Response	Clear Time
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	BLS Low	
Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	(NRV MED)	

T04272. DAT

T05272. DAT